



I-70 EAST

SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT
AND SECTION 4(F) EVALUATION

TRAFFIC NOISE TECHNICAL REPORT

ATTACHMENT K

AUGUST 2014

Table of contents

Chapters	Page
1. Introduction	1
1.1. Project Limits.....	1
1.2. Project Background.....	1
2. Resource Definition	2
3. Applicable Laws, Regulations, and Guidance for Traffic Noise Analysis.....	2
3.1. National Environmental Policy Act	2
3.2. Council on Environmental Quality Regulations.....	3
3.3. Procedures for Abatement of Highway Traffic Noise and Construction Noise	3
3.4. FHWA <i>Measurement of Highway-Related Noise</i>	3
3.5. CDOT <i>Noise Analysis and Abatement Guidelines</i>	3
4. Existing Conditions	3
4.1. Methodology.....	3
5. Description of Alternatives	8
6. Effects Analysis	11
6.1. Methodology.....	11
6.2. Mitigation	13
6.3. Alternative Effects and Proposed Mitigation	15
6.4. Construction Noise.....	70
6.5. Local Agency Coordination	71
7. References.....	72

Figures

Figure 1.	Project Area	1
Figure 2.	Noise Monitoring Locations and Noise-Sensitive Areas	5
Figure 3.	No-Action Alternative.....	9
Figure 4.	Revised Viaduct Alternative.....	9
Figure 5.	Partial Cover Lowered Alternative	10
Figure 6.	Lane Representations in TNM.....	12
Figure 7.	Globeville Noise Impacts: Existing	16
Figure 8.	Globeville Noise Impacts: No-Action Alternative	17
Figure 9.	Globeville Noise Impacts: Build Alternatives, General-Purpose Lanes Option.....	18
Figure 10.	Globeville Mitigation Analysis: Build Alternatives, General-Purpose Lanes Option.....	19
Figure 11.	Globeville Noise Impacts: Build Alternatives, Managed Lanes Option	20
Figure 12.	Globeville Mitigation Analysis: Build Alternative, Managed Lanes Option	21
Figure 13.	Elyria and Swansea Noise Impacts: Existing	24
Figure 14.	Elyria and Swansea Noise Impacts: No-Action Alternative, North Option	26
Figure 15.	Elyria and Swansea Mitigation Analysis: No-Action Alternative, North Option	28
Figure 16.	Elyria and Swansea Noise Impacts: No-Action Alternative, South Option.....	30
Figure 17.	Elyria and Swansea Mitigation Analysis: No-Action Alternative, South Option.....	32
Figure 18.	Elyria and Swansea Noise Impacts: Revised Viaduct Alternative, North Option	34
Figure 19.	Elyria and Swansea Mitigation Analysis: Revised Viaduct Alternative, North Option	36
Figure 20.	Elyria and Swansea Noise Impacts: Revised Viaduct Alternative, South Option	38
Figure 21.	Elyria and Swansea Mitigation: Revised Viaduct Alternative, South Option.....	40
Figure 22.	Elyria and Swansea Noise Impacts: Partial Covered Lowered Alternative, Basic Option	42

Figure 23.	Elyria and Swansea Mitigation: Partial Covered Lowered Alternative, Basic Option	44
Figure 24.	Elyria and Swansea Noise Impacts: Partial Covered Lowered Alternative, Modified Option ..	46
Figure 25.	Elyria and Swansea Mitigation Analysis: Partial Covered Lowered Alternative, Modified Option	48
Figure 26.	Northfield Stapleton Noise Impacts: Existing Conditions and No-Action Alternative	49
Figure 27.	Peoria Street Noise Impacts: Existing Conditions and No-Action Alternative	51
Figure 28.	Montbello Noise Impacts: Existing Conditions and No-Action Alternative	52
Figure 29.	Peoria Street Noise Impacts: Build Alternatives.....	53
Figure 30.	Peoria Street Mitigation Analysis: Build Alternative, General Purpose Lanes Option.....	55
Figure 31.	Peoria Street Mitigation Analysis: Build Alternative, Managed Lanes Option	56
Figure 32.	Montbello Noise Impacts: Build Alternative, General-Purpose Lanes Option	57
Figure 33.	Montbello Noise Impacts: Build Alternative, Managed Lanes Option	58
Figure 34.	Montbello Mitigation Analysis: Build Alternative, General-Purpose Lanes Option	60
Figure 35.	Montbello Mitigation Analysis: Build Alternative, Managed Lanes Option	61
Figure 37.	Aurora Noise Impacts: Build Alternative, General-Purpose Lanes Option	63
Figure 38.	Aurora Noise Impacts: Build Alternative, Managed Lanes Option	63
Figure 39.	Aurora Mitigation Analysis: Build Alternative, General-Purpose Lanes Option.....	66
Figure 40.	Aurora Mitigation Analysis: Build Alternative, Managed Lanes Option	66

Tables

Table 1.	CDOT Noise Abatement Criteria	4
Table 2.	Study Area Model Validation Counts and Noise Readings	7
Table 3.	Maximum Modeled Traffic Volumes for Worst Noise Hour	8
Table 4.	Alternatives and Options	8
Table 5.	Globeville Noise Impacts and Mitigation Summary	22
Table 6.	Existing Noise Conditions in Elyria and Swansea	23
Table 7.	Elyria and Swansea Noise Impacts and Mitigation: No Action Alternative, North Option	27
Table 8.	Elyria and Swansea Noise Impacts and Mitigation: No-Action Alternative, South Option	31
Table 9.	Elyria and Swansea Noise Impacts and Mitigation: Revised Viaduct Alternative, North Option	35
Table 10.	Elyria and Swansea Noise Impacts and Mitigation Results: Revised Viaduct Alternative, South Option.....	39
Table 11.	Elyria and Swansea Noise Impacts and Mitigation Analysis: Partial Cover Lowered Alternative, Basic Option	43
Table 12.	Elyria and Swansea Noise Impacts and Mitigation: Partial Cover Lowered Alternative, Modified Option	47
Table 13.	Noise Impacts: Northfield Stapleton	50
Table 14.	Peoria Street Noise Impacts and Mitigation Summary.....	54
Table 15.	Montbello Noise Impacts and Mitigation Summary	59
Table 16.	Aurora Noise Impacts and Mitigation Summary	65
Table 17.	Noise Wall Mitigation Summary by Neighborhood	68

Appendices

Appendix A	Data and Monitoring Results
Appendix B	CDOT Noise Abatement Forms
Appendix C	Time History Graphs for 24-hour Noise Readings from 2003
Appendix D	Field Notes and Readings

List of acronyms

CDOT	Colorado Department of Transportation
CEQ	Council on Environmental Equality
CFR	Code of Federal Regulations
dB	Decibels
dBA	A-weighted decibel levels
Denver	City and County of Denver
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Leq	Equivalent sound level
LOS	Level of service
mph	Miles per hour
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
PACT	Preferred Alternative Collaborative Team
RTD	Regional Transportation District
TNM	Traffic Noise Model

This page intentionally left blank.

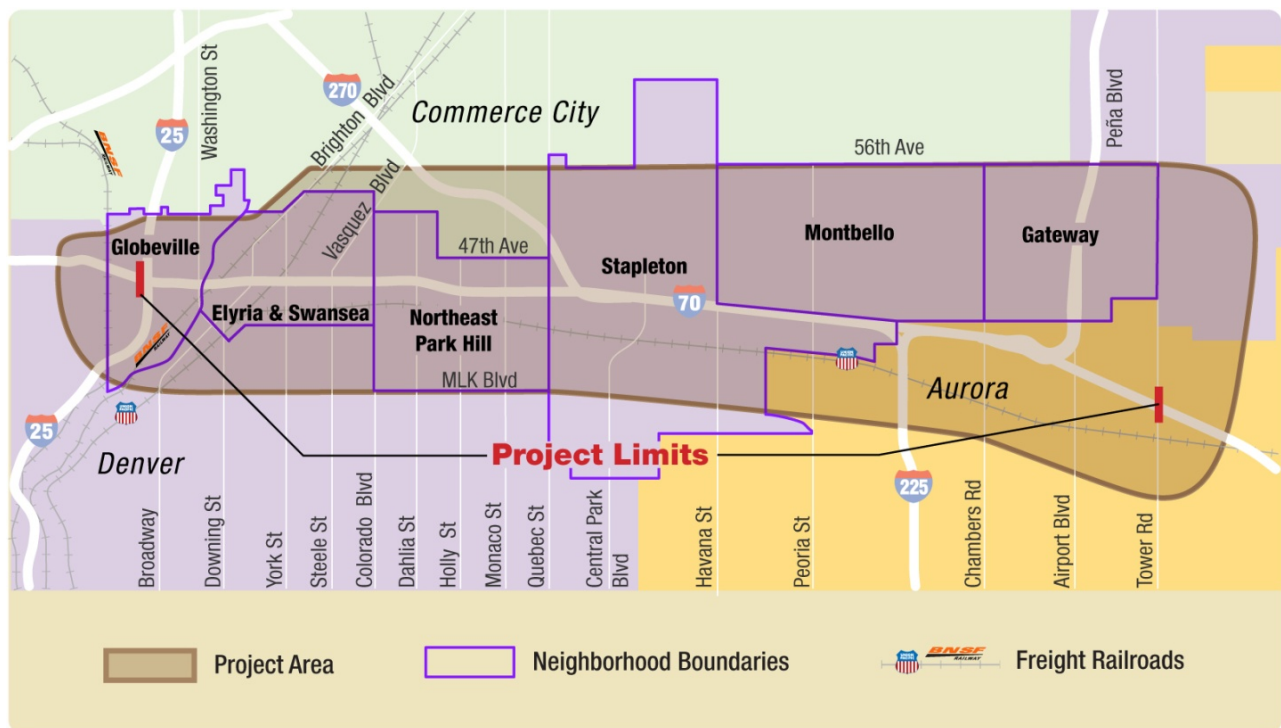
1. Introduction

The I-70 East Environmental Impact Statement (EIS) is a joint effort between the Federal Highway Administration (FHWA) and the Colorado Department of Transportation (CDOT). The intent of the EIS is to identify potential highway improvements along I-70 in the Denver metropolitan area between I-25 and Tower Road and to assess their potential effects on the human and natural environment.

1.1. Project Limits

As shown on Figure 1, the project limits extend along I-70 between I-25 and Tower Road. The project area covers portions of Denver, Commerce City, Aurora, and Adams County. This area includes the neighborhoods of Globeville, Elyria and Swansea, Northeast Park Hill, Stapleton, Montbello, and Gateway. The portion of Aurora in the project area is referred to as the Aurora Neighborhood in this report. Each resource has a specific study area based on the resource.

Figure 1. Project Area



1.2. Project Background

Analysis of I-70 began in June 2003 as part of the I-70 East Corridor EIS, a joint effort conducted by CDOT, FHWA, the Regional Transportation District (RTD), the Federal Transit Administration (FTA), and the City and County of Denver (Denver). In June 2006, CDOT and RTD determined that the highway and transit elements of the I-70 East Corridor EIS process serve different travel markets, are located in different corridors, and have different funding sources. Therefore, the highway and transit components of the analysis were separated. After the project separation, the alternatives that made it through the screening process by addressing the purpose and need of the project were fully evaluated in the Draft EIS, published in November of 2008. With the release of the 2008 Draft EIS, the public and agencies had an opportunity to review and comment on it. Public hearings were held to present the information and encourage formal comments. Due to the complexity of the project and the extensive amount of public comments received during the formal

comment period, the project team decided to form the Preferred Alternative Collaborative Team (PACT) as part of a collaborative process with project stakeholders to recommend a preferred alternative. Through this collaborative process, additional analysis was performed, which resulted in the elimination of two previous alternatives and the addition of a new alternative.

Because more than four years has passed since the 2008 Draft EIS was published, many federal and state regulations and requirements have changed. Additional analysis and public involvement efforts were performed to determine the validity of the alternatives that were considered reasonable alternatives in the 2008 Draft EIS. Based on the public comments, the additional analysis, and the PACT collaborative process, the project team determined that the Realignment Alternatives were no longer reasonable. Consequently, a new alternative option was designed to address the public concerns and incorporate their comments. Due to the changes in the alternatives, outdated census data, and new federal and state laws and regulations, the analysis in the 2008 Draft EIS was revisited and a Supplemental Draft EIS was written.

This report discusses traffic noise as it relates to the I-70 East EIS, including existing conditions in the corridor, resource effect analysis, and mitigation measures.

2. Resource Definition

Noise is generally defined as unwanted or undesirable sound. Noise typically affects humans in three different ways: noise intensity or level, noise frequency, and noise variation with time.

Noise intensity is determined by how sound pressure fluctuates and is expressed in decibels (dB). The range of noise normally encountered can be expressed by values between 0 and 120 dB on the dB scale. A 3-dB change in sound level generally represents a barely noticeable change in noise level, whereas a 10-dB change would be perceived as a doubling of loudness. The frequency of noise is related to the tone or pitch of the sound and is expressed in terms of cycles per second, or Hertz. The human ear can detect a wide range of frequencies from approximately 20 Hertz to 17,000 Hertz. Because human sensitivity to sound varies from person to person, the A-weighting system is commonly used when measuring noise to provide a value that represents human response. Noise levels measured using this system are called “A-weighted” levels, and are expressed as dBA.

Because noise fluctuates during the course of a day, it is common practice to condense all of this information into a single number, known as an equivalent sound level (Leq). Leq represents a steady sound level over a specified time period (typically 60 minutes). Leq(h) is the hourly equivalent noise level; the equivalent steady-state sound level that contains the same amount of acoustic energy as the time-varying sound level over a one-hour period.

3. Applicable Laws, Regulations, and Guidance for Traffic Noise Analysis

This section discusses applicable laws, regulations, and guidance as they pertain to the analysis of traffic noise in this EIS.

3.1. National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code §4321 et seq., Public Law 91-190, 83 Stat. 852), mandates that transportation decisions involving federal funds and approvals consider social, economic, and environmental factors in the decision-making process. NEPA also requires that agencies making such decisions consult with other agencies, involve the public, disclose

information, investigate the environmental effects of a reasonable range of alternatives, and prepare a detailed statement of the environmental effects of the alternatives.

3.2. Council on Environmental Quality Regulations

Council on Environmental Quality (CEQ) Regulations Part 1502, “Environmental Impact Statement” (40 Code of Federal Regulations [CFR] §1502.14) requires that an EIS be prepared when a proposed action is projected to have a significant impact on the quality of the human environment. Under the Council on Environmental Quality regulations, EIS documents must provide full and fair discussion of significant environmental impacts and inform decision makers and the public about project alternatives.

3.3. Procedures for Abatement of Highway Traffic Noise and Construction Noise

Title 23 CFR §772 codifies procedures for considering noise studies in NEPA federal-aid processes and establishes requirements for transferring traffic noise information to local planning agencies to assist in their land use planning activities. This ruling was most recently updated July 13, 2010.

3.4. FHWA Measurement of Highway-Related Noise

FHWA’s *Measurement of Highway-Related Noise* (1996) is intended to provide a uniform guidance reference for highway noise practitioners and researchers, addressing measurement and analysis instrumentation, site selection, measurement procedures, data reduction, and analysis techniques.

3.5. CDOT Noise Analysis and Abatement Guidelines

The CDOT *Noise Analysis and Abatement Guidelines* (2013) implements the FHWA noise regulation for CDOT projects. It provides guidance on conducting traffic noise studies, analyzing abatement options, investigating construction noise levels, and coordinating noise levels with local land use planning officials.

4. Existing Conditions

The project area is almost entirely urbanized with varied land uses. At the west end of the project area, a mix of residential and commercial properties gradually changes to primarily commercial/industrial uses near Colorado Boulevard. Continuing east, residential and commercial developments begin to appear east of I-225. Major new developments have been built and are ongoing in the Stapleton Redevelopment Area between Quebec Street and Havana Street. Retail shops have been constructed north of the I-70 and I-270 interchange. The plan for the area also includes the development of office buildings to the north and the south of I-70. The Gateway area north of I-70 and east of Peña Boulevard has mostly commercial development.

4.1. Methodology

The existing conditions noise analysis was performed in accordance with the requirements of 23 CFR §772, “Procedures for Abatement of Highway Traffic Noise and Construction Noise,” using methodology established by CDOT in their *Noise Analysis and Abatement Guidelines*. Predicted noise levels were produced using the FHWA-mandated software Traffic Noise Model (TNM) version 2.5. All measured and predicted noise levels are expressed in dBA using A-weighting. The hourly equivalent noise levels are defined as the equivalent steady-state sound level that, in a given hourly period, contains the same acoustic energy as the time-varying sound for the same hourly period.

Noise from traffic emanates from four primary sources: tire/road interface, engines, aerodynamics, and exhaust stacks. The dBA weighted numbers are used to determine the effect upon potential noise-sensitive sites. Each of these is considered in the TNM 2.5 model.

4.1.1. Identification of Noise-Sensitive Sites

Noise-sensitive sites are defined as any location where traffic noise may be adverse to the function and outdoor enjoyment of the property. CDOT has established noise levels at which noise abatement must be considered for various types of noise-sensitive sites. These noise levels are referred to as the Noise Abatement Criteria (NAC). As presented in Table 1, the NAC vary according to the land use activity category. Special consideration of adverse traffic noise on indoor functions is called out under properties that are listed under NAC D in Table 1. Noise abatement measures must be considered when either of the following is true:

- Predicted traffic noise levels meet or exceed the NAC.
- A substantial noise increase of 10 dBA over existing conditions is predicted.

Table 1. CDOT Noise Abatement Criteria

Activity Category	Leq(h), dBA	Description of Land Use Activity Category
A	56 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	66 (Exterior)	Residential.
C	66 (Exterior)	Active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	51 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	71 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	—	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	—	Undeveloped lands that are not permitted for development.

Source: CDOT 2013

With the current build-out of the area surrounding the highway, no new development is expected. Some Land Use E areas that were close to I-70 were included in the noise analysis if noise levels may be of concern to the property, such as in areas of frequent outdoor use, at hotels, or restaurant waiting areas. Noise-sensitive areas and noise monitoring locations are shown in Figure 2.

Figure 2. Noise Monitoring Locations and Noise-Sensitive Areas



4.1.2. Noise Monitoring

To validate the computer noise model (see Section 4.1.3, TNM Model Validation), field measurements were taken within the project area following procedures documented in FHWA's *Highway Traffic Noise: Analysis and Abatement Guidance*. Field measurements were obtained using Larson Davis 812 and Larson Davis 712 Sound Level Meters. Meters, microphones, and calibrators are calibrated to factory settings at Larson Davis's Utah lab annually. Noise monitors were calibrated daily before measurements were collected using a Larson Davis sound-level calibrator. Monitoring events generally lasted 10 minutes.

No 24-hour noise readings were conducted. If 24-hour noise information was needed for the corridor, the data from 2003 were referenced as it was assumed that daily traffic patterns have remained consistent since

the original data collection efforts were made. Time history graphs for the 24-hour noise measurements have been included in Appendix C.

The following two observations can be made:

- Existing noise levels at these 24-hour locations exceed 66 dBA for most of the 24-hour period
- Early morning rush hour noise levels are higher than evening rush hour, but their duration is shorter

Data collection efforts focused on noise-sensitive dwelling units within NAC B and NAC C land uses. No interior readings were taken. Within the project area, there are four neighborhoods that have these land uses within 500 feet of I-70: Globeville, Elyria and Swansea, Montbello, and a group of homes in Aurora east of Chambers Road and south of I-70. In each neighborhood, two to four readings were taken perpendicular to one similar location on I-70. Noise monitoring was not performed immediately adjacent to major arterials, such as Washington Street or Colorado Boulevard.

The noise measurements were taken at 20 locations up to 500 feet from the edge of pavement of I-70 and the on and off ramps. The locations included areas of frequent outdoor human use. The closest readings occurred at 50 feet and/or 100 feet from the highway edge of pavement and were used to validate the model. Additional data collection occurred approximately 250 feet and/or 500 feet from the same edge of pavement, which was used for general noise monitoring and to determine additional features such as buildings, terrain, or barriers to add into the noise model.

4.1.3. TNM Model Validation

Site selections for the field validation measurements were conducted in the vicinity of noise-sensitive sites, where safe access to monitoring sites existed, where a representative sampling of free-flow traffic could be obtained, and where roadway geometry remained relatively constant.

For the model validation, two 10-minute counts were collected at each site. Traffic counts were performed with hand-held counters at the time of monitoring, which were used to validate the existing conditions model in TNM. Vehicle types were separated into three categories: cars, medium trucks, and heavy trucks. Vehicle speeds were estimated and recorded during the noise measurements to ensure proper model validation. Data collection occurred mid-day when drivers on I-70 are driving at or near free-flow speeds.

Model validation data was collected within 200 feet of the highway or ramp edge of pavement. The noise monitoring occurred at nine sites adjacent to I-70. Validation occurs when measured noise levels are within 3 dBA of the modeled value. An additional 11 noise measurements were taken at potential identified sensitive dwelling units, including those within NAC Category B, C, and E land uses (23 CFR §772) located up to 500 feet from the edge of pavement. These readings were used to ensure proper model validation, but were used for information only and traffic counts were not collected at all locations. Table 2 summarizes the model validation counts and the additional noise readings collected within the study area. Details of the field measurements taken in September and October of 2012 can be found in Appendix D.

The noise model considers hard and soft propagation surfaces, terrain, existing noise walls, and limited shielding effects from other buildings. Hard and soft propagation surfaces refer to land cover types, such as grass (soft surface) or pavement (hard surface). Noise waves reflect or bounce easier over hard surfaces, allowing noise waves to travel farther. Soft surfaces diffract or break up noise waves, making the wave dissipate sooner and not travel as far. The dwelling units in the model reflect these effects.

Table 2. Study Area Model Validation Counts and Noise Readings

Calibration Site Number	Description/ Neighborhood	Location from Edge of I-70 (feet)	Noise Reading (dBA)	TNM Validation Result (dBA)	Difference
1	Grant St. South of I-70	100	64	63	-1
2	Grant St. South of I-70	325	61	Monitoring Only	
3	Pennsylvania St. North of I-70	75	62	59	-3
4	Pennsylvania St. North of I-70	125	59	60	1
5	Pennsylvania St. South of I-70	300	53	Monitoring Only	
6	Pennsylvania St. South of I-70	400	56	Monitoring Only	
7	Park by train tracks	>500; Ambient	57	Monitoring Only	
8	Vine St. and 46th Ave.	200	65	66	1
9	Vine St. and 47th Ave.	>500; Ambient	58	Monitoring Only	
10	Elizabeth St. and 47th Ave.	125	57	60	3
11	Elizabeth St. and 46th Ave.	200	64	64	0
12	Elizabeth St. and 46th Ave.	>500; Ambient	63	Monitoring Only	
13	Clayton St. and 45th Ave.	425	62	Monitoring Only	
14	Old Elyria School	>500; Ambient	58	Monitoring Only	
15	DIA Self Storage	225	61	64	3
16	Montbello Neighborhood	>500; Ambient	51	Monitoring Only	
17	Sable Ridge Residences	>500; Ambient	57	Monitoring Only	
18	Kalispell St. acreage homes	50	75	74	-1
19	Kalispell St. acreage homes	100	73	71	-2
20	Kalispell St. acreage homes	475	60	Monitoring Only	

At the start of the validation process, validation sites were selected throughout the corridor by reviewing project aeriels. Multiple sites were chosen to represent the entire project area. Successful validation of sites in different neighborhoods with different roadway geometry, traffic conditions, terrain lines, and shielding (buildings and other impediments to the propagation of noise) provided high confidence in the TNM model results and subsequent decisions made in the remaining portions of the noise study.

4.1.4. Existing Conditions Worst Noise Hour

Based on CDOT's *Noise Analysis and Abatement Guidelines*, 66 dBA was used as the approach noise level in the analysis of the existing conditions in the study area (see Table 1).

Noise studies typically use loudest noise conditions in determining the dBA, which is the hour with the highest volume of traffic traveling at the fastest, congestion-free speeds. For roadway links that experience a Level of Service (LOS) rating of LOS D, LOS E, or LOS F during the peak hours of the day, the "loudest volume" as recommended in Exhibit 4 of the CDOT *Noise Analysis and Abatement Guidelines* was referenced, which is summarized in the "maximum vehicles per hour per lane" column of Table 3. Per Table 3, all roadways within the project limits were divided into three categories that are consistent with CDOT's guidelines. For the I-70 noise analysis, one speed limit (55 miles per hour [mph]) was assumed for all of I-70, one speed limit was modeled for all ramps (45 mph), and one speed limit was modeled for all frontage roads, collector streets, and arterials (40 mph), depending on the number of lanes. Daily and hourly volumes, as well as truck percentages, were collected in September 2012.

Traffic volumes on local streets were not considered in the model because the low speeds of the roadways and the low traffic volumes do not contribute significantly to the overall noise level experienced by the dwelling units.

Table 3. Maximum Modeled Traffic Volumes for Worst Noise Hour

Roadway Type	Facility Type (per CDOT Guidelines)	Speed (mph)	Maximum Vehicles per Hour per Lane	Truck Percentage (total: medium/heavy)
Highway (I-70)	Freeway	55	2,000	(20: 85/15)
Ramps	Non-freeway multiple lane	45	2,100	(20: 75/25)
Multi-lane frontage roads, arterials, and collectors	Non-freeway multiple lane	40	2,200	(15: 85/15)

5. Description of Alternatives

The I-70 East Supplemental Draft EIS examines potential effects to social, environmental, and economic resources resulting from proposed improvements to I-70 between I-25 and Tower Road. Consistent with federal regulations, the Supplemental Draft EIS fully evaluates potential effects that might result from the No-Action Alternative and the Build Alternatives (Revised Viaduct Alternative and Partial Cover Lowered Alternative). The alternatives and options are presented in Table 4.

For more detail on the alternatives and their options, see the I-70 East Supplemental Draft EIS Alternative Analysis Technical Report.

Table 4. Alternatives and Options

Alternative		Expansion Options	Connectivity Options	Operational Options
No-Action		<ul style="list-style-type: none"> North South 	N/A	N/A
Build Alternatives	Revised Viaduct	<ul style="list-style-type: none"> North South 	N/A	<ul style="list-style-type: none"> General-Purpose Lanes Managed Lanes
	Partial Cover Lowered	N/A	<ul style="list-style-type: none"> Basic Modified 	<ul style="list-style-type: none"> General-Purpose Lanes Managed Lanes

The No-Action Alternative replaces the existing viaduct between Brighton Boulevard and Colorado Boulevard without adding any capacity; the remainder of the corridor will reflect current conditions and include existing, planned, and programmed roadway and transit improvements (such as FasTracks) in the study area. The No-Action Alternative is shown in Figure 3.

Figure 3. No-Action Alternative



Build Alternatives

Build Alternatives add capacity to I-70 by constructing additional lane(s) or restriping between I-25 and Tower Road.

Revised Viaduct Alternative. The Revised Viaduct Alternative is shown in Figure 4. This alternative replaces the existing I-70 viaduct between Brighton Boulevard and Colorado Boulevard. It adds two additional lanes in each direction from Brighton Boulevard to Tower Road. It also adds capacity from I-25 to Brighton Boulevard.

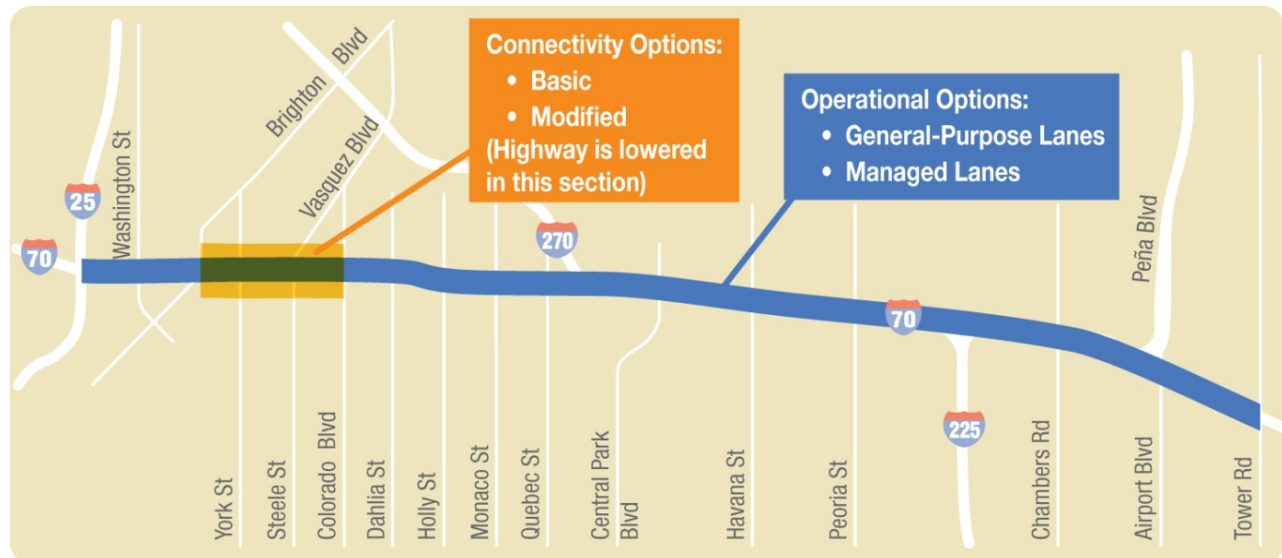
Figure 4. Revised Viaduct Alternative



Partial Cover Lowered Alternative. The Partial Cover Lowered Alternative is shown in Figure 5. This alternative removes the existing I-70 viaduct between Brighton Boulevard and Colorado Boulevard, lowering the highway below grade in this area, while adding two additional lanes in each direction from Brighton

Boulevard to Tower Road. This alternative includes a cover over the highway between Clayton Street and Columbine Street. The alternative also adds capacity from I-25 to Brighton Boulevard.

Figure 5. Partial Cover Lowered Alternative



Alternative Options

Expansion Options

Expansion Options, shown in Figure 3 and Figure 4, refer to moving the north edge of the highway north or the south edge of the highway south of the existing facility from Brighton Boulevard to Colorado Boulevard to accommodate the larger footprint resulting from standard width lanes, expanded shoulders, and construction phasing. These options apply to the No-Action Alternative and the Revised Viaduct Alternative. The Partial Cover Lowered Alternative does not include the Expansion Options because expansion of the highway can occur only on the north side due to engineering restrictions and the location of the UPRR rail yard to the south at Brighton Boulevard.

Connectivity Options

Connectivity Options are shown in Figure 5 and apply only to the Partial Cover Lowered Alternative. They include different frontage road and highway cover combinations. The Basic Option includes a highway cover between Clayton Street and Columbine Street, with 46th Avenue operating as a one-way road on each side of the highway (westbound on the north side and eastbound on the south side). The Modified Option removes the Steele Street/Vasquez Boulevard interchange to allow for an additional cover in the vicinity of Steele Street. 46th Avenue is designed as a two-way street on both the north and south sides of the highway; however, it is discontinued between Clayton Street and Columbine Street on the north side to allow for a seamless connection between Swansea Elementary School and the cover. Vehicular north/south connectivity across the highway at Josephine Street will be eliminated and replaced with a bike/pedestrian bridge. Additional connectivity and intersection improvements are discussed in the Supplemental Draft EIS (Chapter 3, Summary of Project Alternatives).

Operational Options

Operational Options include two scenarios on how the additional capacity will be managed and operated. The General-Purpose Lanes Option will allow all vehicles to use all the lanes on the highway, while the Managed Lanes Option implements operational strategies (such as pricing) for the additional lanes that would be adjusted based on real-time traffic demand for vehicles that use these lanes. The additional lanes are separated with a four-foot buffer from the rest of the lanes under the Managed Lanes Option, and they

have direct connections to I-225, I-270, and Peña Boulevard. Operational Options apply to the Revised Viaduct Alternative and the Partial Cover Lowered Alternative, and they are shown in Figure 4 and Figure 5.

6. Effects Analysis

The effect analysis presents the results of traffic noise effects from implementation of project alternatives and discusses mitigation measures to minimize adverse effects. The effect assessment for the I-70 East Supplemental Draft EIS compares the No-Action and Build Alternatives to the existing conditions.

6.1. Methodology

The assessment of noise effects from traffic operations is based on a comparison of existing and projected future noise exposure for noise-sensitive land use categories. At the start of the traffic noise study, several methodologies were proposed. The methodologies were approved by the project team with an understanding that some flexibility should be built in for special issues that surfaced. The following subsections describe the methodologies followed for the noise effects analysis.

6.1.1. Noise Model

FHWA's TNM 2.5 was used for all traffic noise modeling. This software is required for all noise analysis, per the ruling in 23 CFR §772. TNM calculates traffic noise levels based on input for the loudest hour traffic volumes, operating speeds, and surrounding environmental characteristics. This information then is used to determine which dwelling units meet or exceed the established noise criteria.

6.1.2. Shielding

Shielding was assigned to receptors as needed on the corridor by using building rows in TNM. This was determined based on noise readings collected during data collection and from the model output.

6.1.3. Placement of Receptors

The receptor location was placed in the middle of the property closest to the noise source, unless there was an apparent area of frequent outdoor human use. In locations with multiple dwelling units grouped together (such as a densely populated residential neighborhood), dwelling units were grouped together to represent up to five dwelling units rather than modeling every property on the corridor.

All receptors with an NAC Category B, C, or E land use within 500 feet of the highway edge of pavement (existing or proposed) were included in the model. After a base model was developed with the entire project area roadway network, individual neighborhood TNM models for Globeville, Elyria and Swansea, and Montbello/Aurora were developed for each alternative and option. Additional dwelling units were modeled within the commercial, industrial, or business park areas.

6.1.4. Traffic and Speed

As discussed previously, monitoring was conducted during time periods having the worst-case noise conditions. The same is true for modeling. Worst-case conditions on the I-70 mainline were at volumes determined using the information from Exhibit 4 of CDOT's *Noise Analysis and Abatement Guidelines*. Table 3: Existing Conditions Worst Noise Hour, in Section 4.1.4, provides the volume, speed, and truck percentage assumptions for the traffic noise modeling.

6.1.5. Input Data

Accurate vertical and horizontal data for roadways, receptors, existing noise walls, existing berms, and jersey barriers were needed for noise modeling. Microstation, geographic information system, and field reviews were used to provide accurate vertical/horizontal data for all features.

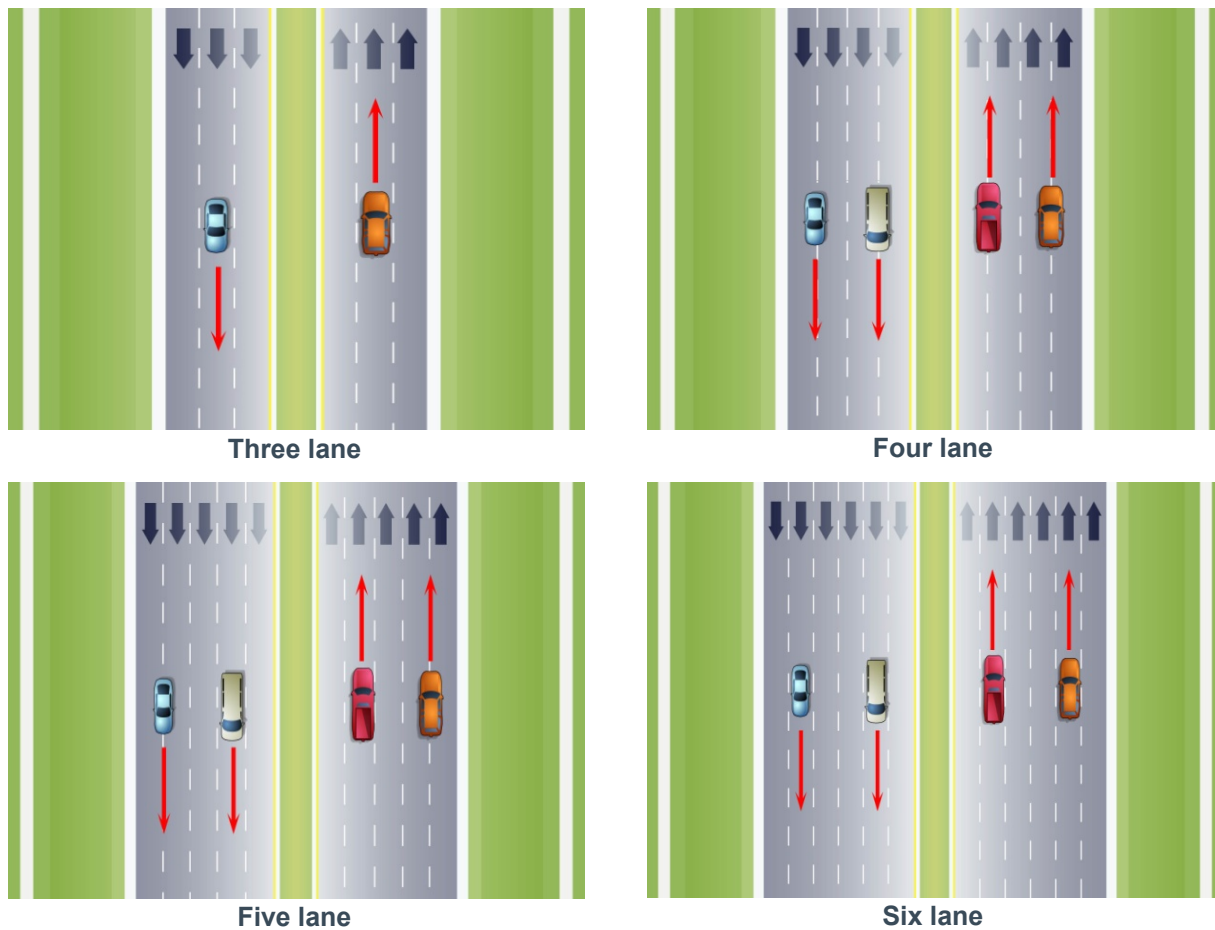
6.1.6. Number of Lanes in TNM Model

In cases where there are multiple lanes of travel, up to three lanes having the same traffic characteristics may be combined in the model as one lane of travel per direction. Currently, I-70 east has three or four lanes in each direction. One lane was used to represent up to three lanes in TNM and two lanes were used to represent four-lane configurations. Two lanes were used to represent the five-lane and six-lane configurations. Figure 6 depicts the number and placement of representative lanes in TNM.

Two-lane ramps and frontage roads were modeled as one lane in TNM. The lane was modeled down the center of both lanes for a two-lane section or in the center of the lane for a one-lane section.

For a two-lane cross street with one lane in each direction, each direction of travel was modeled separately in TNM and was modeled at the center of the lane.

Figure 6. Lane Representations in TNM



6.1.7. Future Modeling Year

The noise modeling was analyzed with the same 2035 future conditions year as the 2008 Draft EIS; however, much of the future conditions analysis analyzes the peak hour, whereas the noise analysis analyzed the loudest hour. In some cases, such as on the ramps and some arterials, the loudest hour may have occurred during a peak hour, but in most cases the loudest hour occurred mid-day and was analyzed at the LOS D threshold on the roadway as identified in CDOT's *Noise Analysis and Abatement Guidelines*. Existing, no-action, and future build scenarios all used either the loudest hour volumes or the highest projected volumes, whichever resulted in the worst-case conditions for the noise analysis.

6.1.8. Apartments/Hotels/Condos

Noise-sensitive structures with multiple floors having areas of frequent human outdoor use were modeled. The noise analysis included all floors both above and below the grade of the existing roadway. Pool areas and playgrounds associated with these land uses also were included in the analysis.

6.1.9. Rounding

Noise values were rounded to the nearest whole number when reporting existing and future noise volumes, per Section 4.6 of the CDOT *Noise Analysis and Abatement Guidelines*. For cost-benefit calculations, all values were calculated to one tenth of a decimal point, as reported in TNM.

6.2. Mitigation

The evaluation of alternative effects is organized by neighborhood sections and focuses on specific noise-sensitive NAC B, NAC C, and NAC E dwelling units. The noise-sensitive areas were analyzed for their existing noise levels, the 2035 No-Action noise levels, and for the noise levels for each of the build options. Mitigation is only considered for areas that have impacted dwelling units. Dwelling units are considered impacted if the noise level exceeds the NAC thresholds outlined in Table 1 or if the dwelling unit experiences a substantial increase in noise (at least a 10-dBA increase over existing noise levels). While there are multiple options that can be used to mitigate noise impacts, the most common is the addition of noise walls, which were used in each alternative/options mitigation analysis.

To determine whether noise walls may be both feasible and reasonable, the decibel decrease due to a noise wall must be compared against the scenario of building the highway without the noise wall, so both scenarios of “no wall” and “with a wall” were analyzed for each option that required construction or expansion of roadway capacity. A detailed description of how abatement is determined to be feasible and reasonable will follow in Section 6.2.1. Impacts to residential, special land use, and noise-sensitive commercial properties associated with each alternative were evaluated by neighborhood.

The discussions in the following subsections include figures that show the receptors modeled in TNM based on their NAC designation. Each modeled receptor represents between one and five dwelling units and the figure summarizes whether the modeled noise levels are below their respective NAC criteria (shown in blue) or exceed the threshold (shown in orange). Tables showing the TNM predicted noise level for the loudest hour can be found for each option and each model run created in Appendix A.

6.2.1. Mitigation Strategies

Abatement measures considered include traffic system management techniques, alignment modifications, property acquisition, land use controls, and noise walls.

Traffic System Management

Traffic system management techniques that limit motor vehicle speeds and reduce traffic volumes can be used to abate traffic noise. However, I-70 will remain a major thoroughfare supporting intrastate and interstate commerce, and speed limits will not be reduced.

Alignment Modifications

Alignment modification involves orienting and/or sighting the roadway at sufficient distances from the noise-sensitive areas so as to minimize traffic noise. Alignment modifications were not considered to be reasonable alternatives.

Property Acquisition

Property acquisition programs to provide noise buffer zones are not feasible due to the limited availability and high cost of vacant land in proximity to noise-sensitive sites.

Land Use Controls

The land uses adjacent to I-70 are well established along the corridor. Land use controls could be used to minimize future noise-sensitive development. Local planning officials should use the noise contour information and development site plans to minimize the effects of traffic noise on proposed land uses that would be considered noise sensitive. This especially applies to the development in the Stapleton area or along areas of the build options that could redevelop.

Noise Walls

Noise walls reduce noise levels by blocking the sound path between a roadway and a noise-sensitive site. They are considered only if they are found to be feasible and reasonable. CDOT has developed the Noise Abatement Determination form, included in Appendix B, to ensure consistent evaluation of noise abatement statewide.

For a noise wall to be recommended for inclusion or advancement in the project area, it must be both feasible and reasonable.

To be considered feasible, a wall:

1. Must cause at least a 5-dBA reduction for at least one impacted dwelling unit
2. Must not reduce safety, such as reducing sight distance
3. Must be possible to construct with reliable and common engineering practices

If a wall does not meet these criteria, it cannot be considered feasible.

To be considered reasonable, noise mitigation:

1. Should create an insertion loss (the difference in noise levels after mitigation and before mitigation) of 7 dBA or greater for at least one dwelling unit
2. Must meet financial standards for cost effectiveness. One criterion is the cost-benefit index. A cost-benefit value of more than \$6,800 per dwelling unit, per decibel reduction, is considered unreasonable. A hypothetical example of this calculation is a 1,000-foot long, 10-foot high barrier that provides protection for a development of 16 homes. A 5-dBA benefit was experienced by six receptors, and a 7-dBA reduction was experienced by 10 receptors. The cost calculation for this would be as follows:
 - Barrier cost = 1,000-foot long x 10-foot high x \$45 per square foot = \$450,000 (\$45 is a unit cost specified in CDOT guidance for computing the cost-benefit factor only and does not necessarily represent all of the costs that are incurred when constructing a noise wall)
 - dB per benefitted dwelling units = (6 receptors x 5 dBA reduction) + (10 receptors x 7 dBA reduction) = 100 total dBA of reduction
 - Results in a cost-benefit index of \$4,500 per decibel reduction per benefitted dwelling unit, which would be considered economically reasonable
 - Wherever noise abatement is warranted and determined feasible, other factors, such as community desires, adjacent land uses, land use stability, development existence, safety considerations, drainage issues, utility conflicts, maintenance requirements, vegetation/environmental effects, access, and construction will be considered.
3. Must be desired by the benefitted community. Benefitted receptors, defined as any property containing a noise-sensitive receptor that receives at least a 5-dBA reduction, participate in an initial and final Benefitted Receptor Preference Survey. The initial survey will be conducted when mitigation is determined for the Preferred Alternative as a part of the Final EIS. The benefitted receptor's desires will not be included in the reasonableness analysis in this Supplemental Draft EIS. The final survey is required prior to construction.

It should be noted that the \$6,800 threshold in and of itself will not eliminate a location from consideration, since there are other reasonableness factors that are taken into account. The CDOT guidelines provide a form for determining if a noise wall is reasonable and feasible, which is provided in Appendix B.

If a wall does not meet both feasible and reasonable criteria, it cannot be recommended for advancement. However, per CDOT guidelines, if an existing barrier must be removed to build a proposed project, then that barrier must be replaced. If a barrier is not determined to be both feasible and reasonable, but would be replacing an existing barrier that must be removed, then the barrier that maximizes the feasible and reasonable benefits to the impacted dwelling units will be recommended for advancement.

An analysis of a potential noise wall was performed for each location along I-70 that warranted mitigation based on impacts and a feasible and reasonable analysis. The recommendations will be carried forward and analyzed in more detail in the Final EIS. The preliminary noise walls described are based upon preliminary design, and if conditions substantially change during final design, the mitigation measures are subject to change or might not be provided. A final decision of the installation of mitigation measures will be made upon completion of the project's final design and the public involvement process. The viewpoints of the impacted residents and property owners should be a major consideration in determining the reasonableness of mitigating the highway traffic noise, through the use of the initial benefitted receptor survey and the final benefitted receptor survey. The will and desires of the public should be an important factor in dealing with the overall problems of highway traffic noise. At the final design stage, noise wall locations will undergo a noise abatement re-evaluation.

6.3. Alternative Effects and Proposed Mitigation

At impacted locations along the corridor that may benefit from noise mitigation, a feasible and reasonable analysis was conducted. All the proposed noise walls were modeled within the CDOT right of way. If a noise wall was found to be feasible and reasonable, then the height and length were identified for each proposed alternative and option. A detailed design of the recommended noise walls, including aesthetics, materials, and precise sighting, was not performed at this level but will be performed for the selected Preferred Alternative in the Final EIS.

Per CDOT guidelines, the maximum wall height considered to be feasible was 20 feet. CDOT has determined that for Colorado terrain and weather conditions, including common high wind events, 20 feet is the maximum allowable height without compromising structural integrity under typical construction design specifications. It is a general rule that the minimum height considered is 8 feet, although this is not specified directly in the CDOT guidelines.

6.3.1. Globeville Neighborhood

The Globeville Neighborhood is located both north and south of I-70 and spans between I-25 and Washington Street. This portion of I-70 has been reconstructed in recent years and includes existing noise walls along I-70 and I-25. Existing I-70 noise walls vary in height from 8 feet to 12 feet and extend along both sides of I-70 from the I-25 junction along the raised interstate and I-25 interchange ramps to the Washington Street interchange. There is also a 10-foot wall along the median from the beginning of raised interstate near Lincoln Street to Washington Street (see Figure 7). Within the study limits 500 feet from the edge of travel, residential properties are the primary land use, but there is also a church and several businesses located to the north of I-70, as well as some commercial properties along 45th Avenue south of I-70.

Existing

Figure 7 shows the receptors modeled in TNM and summarizes whether the existing noise levels are below the NAC criteria (shown in blue) or exceed the threshold (shown in orange). Within 500 feet of the existing roadway there are 130 dwelling units in Globeville north of I-70 and 102 identified dwelling units in Globeville south of I-70.

The existing noise walls are very effective at blocking highway traffic noise. Only three dwelling units (one modeled receptor) exceed their NAC B threshold, and by only 0.3 dBA during the loudest hour. These

dwelling units exceed the NAC threshold because they are near the edge of the existing noise wall, which is located within 150 feet of Washington Street and receives noise from the arterial road.

Figure 7. Globeville Noise Impacts: Existing



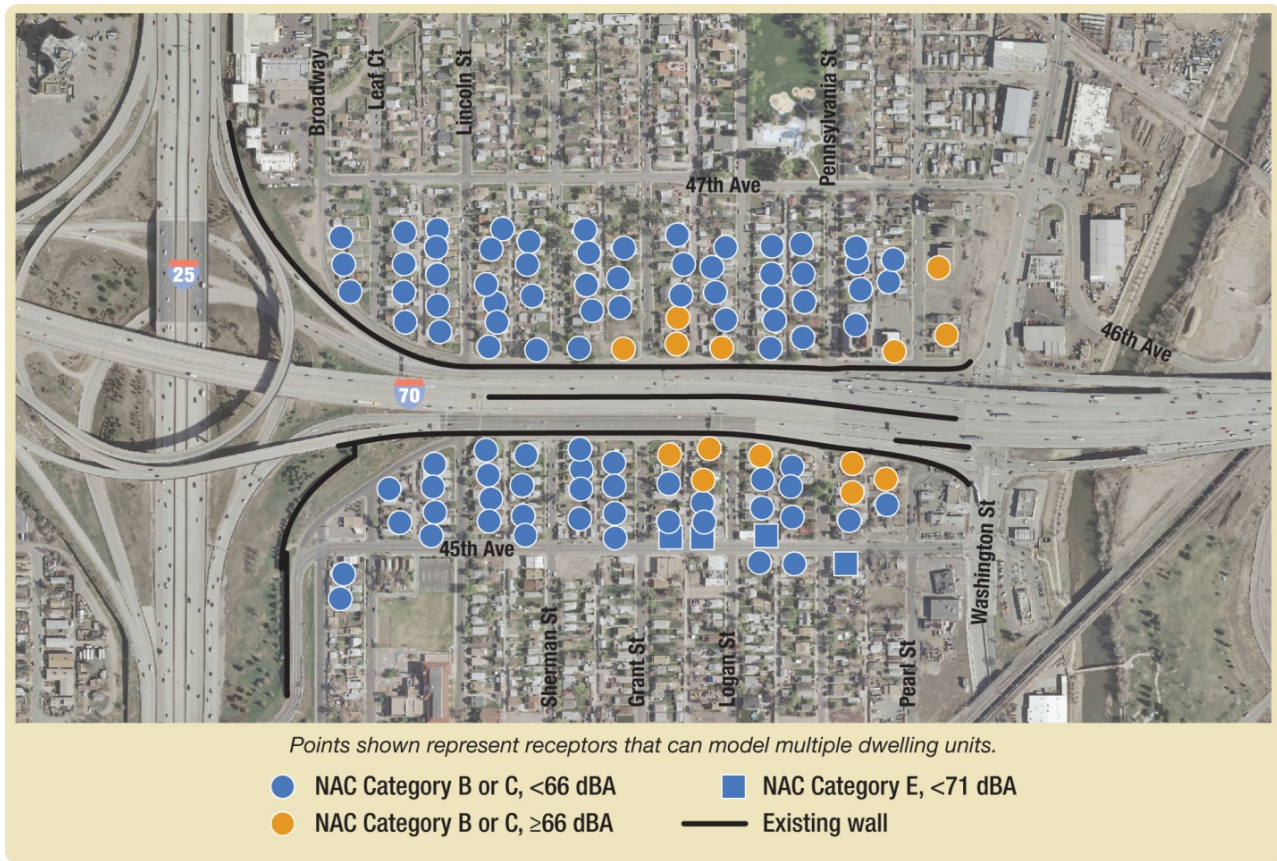
No-Action Alternative

The No-Action Alternative does not propose any construction adjacent to the Globeville Neighborhood. It is provided for a comparison to the Build Alternative noise levels. The existing noise walls would remain in place, and the analysis of the No-Action Alternative was conducted with the walls included.

For the 2035 No-Action Alternative, there are anticipated to be significantly higher interstate, ramp, and arterial roadway traffic volumes because of surrounding area growth. The TNM model was run using the same lane configuration and modeled points as the existing model, but with the projected 2035 loudest hour volumes.

For the No-Action Alternative, noise levels are anticipated to range from 60.6 dBA to 69.4 dBA, which is an increase of 2.1 dBA to 3.1 dBA over the existing noise levels. Of the 130 dwelling units in Globeville north of I-70, 13 (seven modeled receptors, see Figure 8) are anticipated to exceed their respective NAC thresholds and of the 102 dwelling units south of I-70 in the Globeville Neighborhood, 15 (seven modeled receptors, see Figure 8) are anticipated to exceed their respective NAC thresholds. The No-Action Alternative does not propose changes in this area, so existing noise walls remain as adequate noise mitigation because they are functional and in good condition.

Figure 8. Globeville Noise Impacts: No-Action Alternative

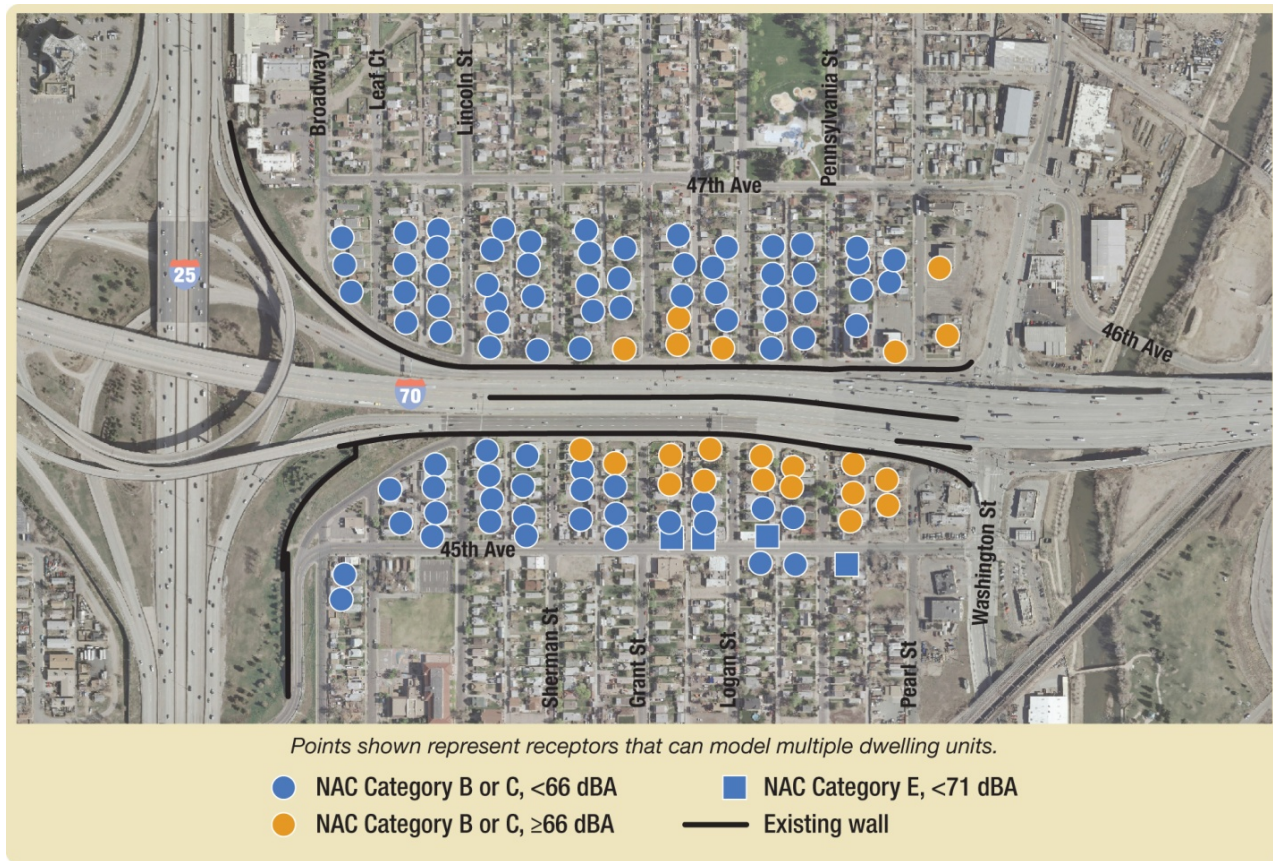


Build Alternative, General-Purpose Option

The future build options being analyzed for the Build Alternative, General-Purpose Option do not include construction on I-70 or the ramps adjacent to Globeville. No changes in striping are proposed compared to the existing lane configuration. The 2035 Build Alternative, General-Purpose Option volumes are proposed to be significantly higher than existing traffic and higher than that for the No-Action Alternative due to background growth in the area as a result of the added capacity to the east.

Of the 232 dwelling units in Globeville, 48 (13 north of I-70 and 35 south of I-70; 22 modeled receptors) would exceed their respective NAC thresholds (Figure 9). Of these 48 impacted dwelling units, none would experience substantial increases in noise. Noise levels under the General-Purpose Lanes Option would range from 60.7 dBA to 69.6 dBA north of I-70, which is an increase of 2.2 dBA to 3.3 dBA from existing noise levels. Noise levels would range from 62.1 dBA to 69.6 dBA south of I-70, which is an increase of 3.1 dBA to 5.1 dBA over the existing noise levels.

Figure 9. Globeville Noise Impacts: Build Alternatives, General-Purpose Lanes Option



While there is no construction or striping change adjacent to Globeville in the Build Alternative, mitigation was considered to determine if taller noise walls, as compared to the existing walls, are a possibility in this area to block the additional traffic noise predicted for the future. In doing the analysis for this neighborhood, the existing 10-foot walls were included in the “No Wall” scenario that is used to find the insertion loss. The “Wall” condition looked at constructing 12-, 14-, 16-, 18-, and 20-foot walls, which were analyzed as a wall complex in the location of the existing walls, with the exception of the existing wall along the median (Figure 10). The noise walls shown are based upon preliminary design and are subject to change.

From this initial review, additional noise mitigation does appear to be feasible along the south side of I-70, but not along the north side of I-70. Noise walls do not appear to be reasonable along the north or south side of I-70 (see Figure 10). For more information on the abatement determination, see the associated CDOT Noise Abatement forms included in Appendix B.

Figure 10. Globeville Mitigation Analysis: Build Alternatives, General-Purpose Lanes Option



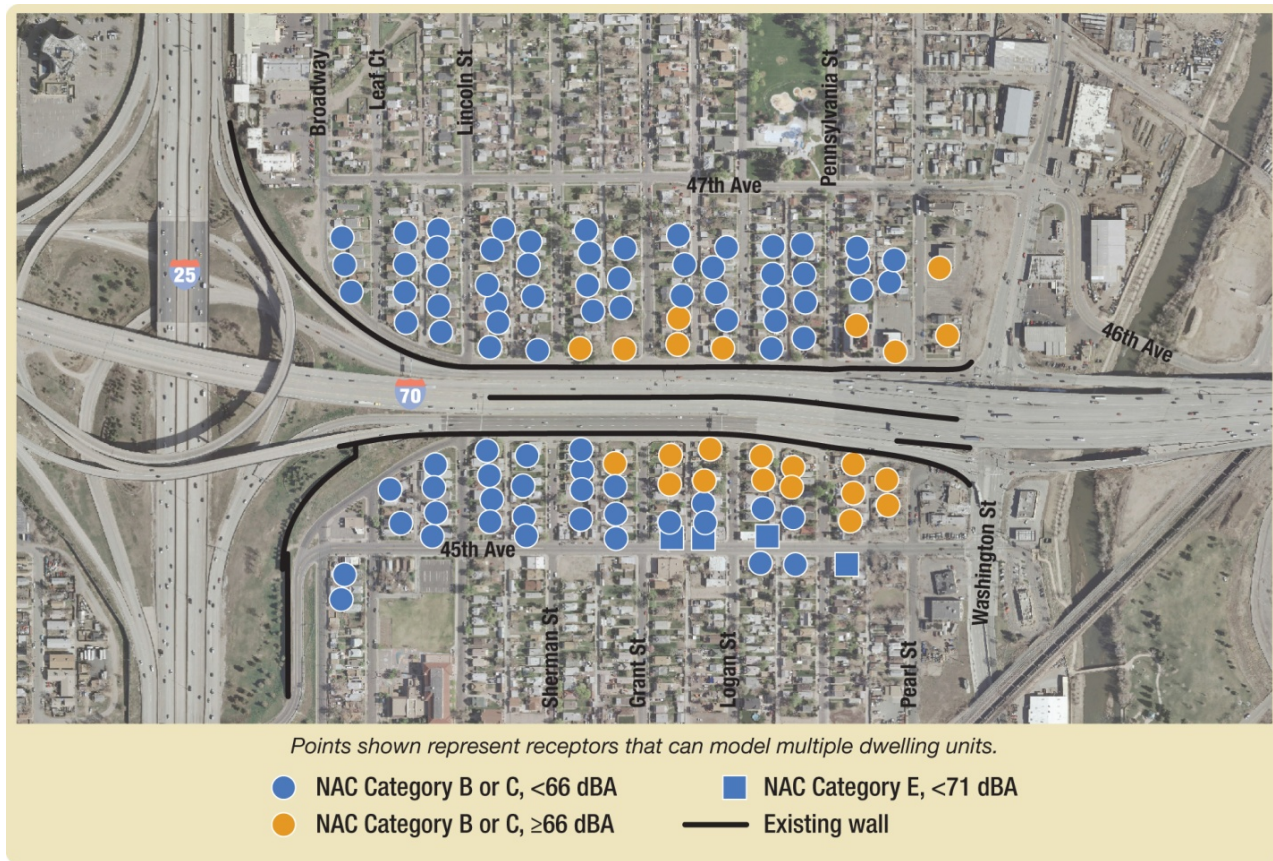
Build Alternative, Managed Lanes Option

For the Build Alternative, Managed Lanes Option, there is one additional eastbound lane proposed to be added on the inside of the existing eastbound lanes by restriping the roadway. No construction is proposed adjacent to the Globeville Neighborhood.

The 2035 build volumes for the Managed Lanes Option are similar to the General-Purpose Lanes Option because the loudest hour is being analyzed, which typically exceeds the peak hour for all of the options. The CDOT thresholds for loudest hour often are used. The Managed Lanes Option will undergo mitigation analysis to determine whether modifications to existing noise walls to block the additional traffic noise predicted for the future are feasible and reasonable (see Figure 11).

For the Managed Lanes Option, the impacts from the Build Alternative are greater than for the No-Action Alternative and the Build Alternative, General-Purpose Lanes Option because there is added capacity on I-70 adjacent to Globeville. Noise levels are anticipated to range from 60.7 dBA to 69.9 dBA north of I-70, which is a 2.2 dBA to 3.6 dBA increase over the existing noise levels. Noise levels would range from 62.3 dBA to 69.1 dBA south of I-70, which is an increase of 3.3 dBA to 4.6 dBA over existing noise levels. Of the 232 dwelling units in Globeville, 49 (16 north of I-70 and 33 south of I-70, 23 modeled receptors, see Figure 11) are anticipated to exceed their respective NAC thresholds. None of the Globeville dwelling units experience a 10 dBA or greater increase over existing noise levels for the Managed Lanes Option.

Figure 11. Globeville Noise Impacts: Build Alternatives, Managed Lanes Option



The restriping to accommodate the eastbound managed lane does not affect the existing noise walls in Globeville. In doing the mitigation analysis for this neighborhood, the existing 10-foot walls were included in the “No Wall” scenario that is used to find the insertion loss. The “Wall” condition looked at constructing 12-, 14-, 16-, 18-, and 20-foot walls, which were analyzed as a wall complex in the location of the existing walls with the exception of the existing wall along the median (see Figure 12). The noise walls shown are based upon preliminary design and are subject to change.

From this initial review, additional noise mitigation does appear to be feasible along the south side of I-70, but not along the north side of I-70. Noise walls do not appear to be reasonable along the north or south side of I-70 (see Figure 12). For more information on the abatement determination, see the associated CDOT Noise Abatement forms included in Appendix B.

Figure 12. Globeville Mitigation Analysis: Build Alternative, Managed Lanes Option



Table 5. Globeville Noise Impacts and Mitigation Summary

Impacts/Mitigation	Globeville North of I-70				Globeville South of I-70			
	Existing	No-Action Alternative	Build Alternatives		Existing	No-Action Alternative	Build Alternatives	
			General-Purpose Lanes Option	Managed Lanes Option			General-Purpose Lanes Option	Managed Lanes Option
Noise Impacts								
Number of Dwelling Units	130	130	130	130	102	102	102	102
Number of Relative Impacts (≥NAC)	3	13	13	16	0	15	35	33
Number of Substantial Impacts (≥10 dBA)	N/A	0	0	0	N/A	0	0	0
Leq(h) (dBA) Min	58.5	60.6	60.7	60.7	59.0	61.4	62.1	62.3
Leq(h) (dBA) Max	66.3	69.4	69.6	69.9	64.5	68.6	69.6	69.1
Mitigation Criteria								
Number of Receivers with ≥7-dBA reduction	N/A	N/A	0	0	N/A	N/A	0	0
Number of Receivers with ≥5-dBA reduction			0	0			12	17
Optimal Proposed Wall Height (feet)			12	12			20	20
Length of Wall (feet)			3,370	3,370			2,540	2,540
Cost of Wall			\$1,817,320	\$1,817,320			\$2,285,150	\$2,285,150
dBA Benefit of Receivers with ≥5-dBA reduction			0	0			66	94
Cost-Benefit Index			\$0	\$0			\$34,890	\$24,230
Is the Wall Feasible?	N/A	N/A	No	No	N/A	N/A	Yes	Yes
Is the Wall Reasonable?			No	No			No	No
Is the Wall Recommended for Advancement?			No	No			No	No

6.3.2. Elyria and Swansea Neighborhood

The western part of this neighborhood area is Elyria, which lies between Brighton Boulevard and York Street. South of I-70, this neighborhood is mostly industrial NAC F land use. Since the NAC F category doesn't have a designated NAC threshold, per CDOT guidelines, Elyria south of I-70 was not included in the analysis. North of I-70, most parcels are residential and there is also a school and a library located within the project area. A 10-foot noise wall exists along the westbound ramps and highway approaching Brighton Boulevard in Elyria. The noise walls were included in the existing conditions model. The noise walls block some traffic noise for the western part of the neighborhood. However, many dwelling units between Race Street and York Street currently experience noise levels above the NAC threshold.

The eastern portion of the neighborhood is Swansea, which begins to the west at York Street and ends to the east at Madison Street. The majority of the noise-sensitive dwelling units in this area are residential homes. Swansea Elementary School and several NAC C dwelling units also are located north of I-70, and there is a park to the south of I-70. There also are some commercial NAC E properties south of I-70. Instead of noise walls, safety barriers are in place in this area along the north and south edge of the I-70 viaduct that spans from York Street to Clayton Street. These barriers were added to the I-70 viaduct as a safety measure rather than for noise mitigation. They are not made of sufficiently dense material, not of sufficient length to shield all of the dwelling units, do not block noise from the on and off ramps, and are not tall enough to block the tops of trucks from view, which makes them less effective for blocking noise.

Existing

Figure 13 shows the receptors modeled in TNM and summarizes whether the existing noise levels are below the NAC threshold or exceed the threshold. Each modeled receptor represents one to five dwelling units. There are 155 dwelling units in the Elyria area, which were modeled as 73 representative points in TNM.

In Swansea, most of the dwelling units are NAC B or NAC C and have a threshold of 66 dBA to consider noise abatement. Within the study limits between York Street and Madison Street, there are 322 dwelling units, which were modeled as 162 representative points in TNM.

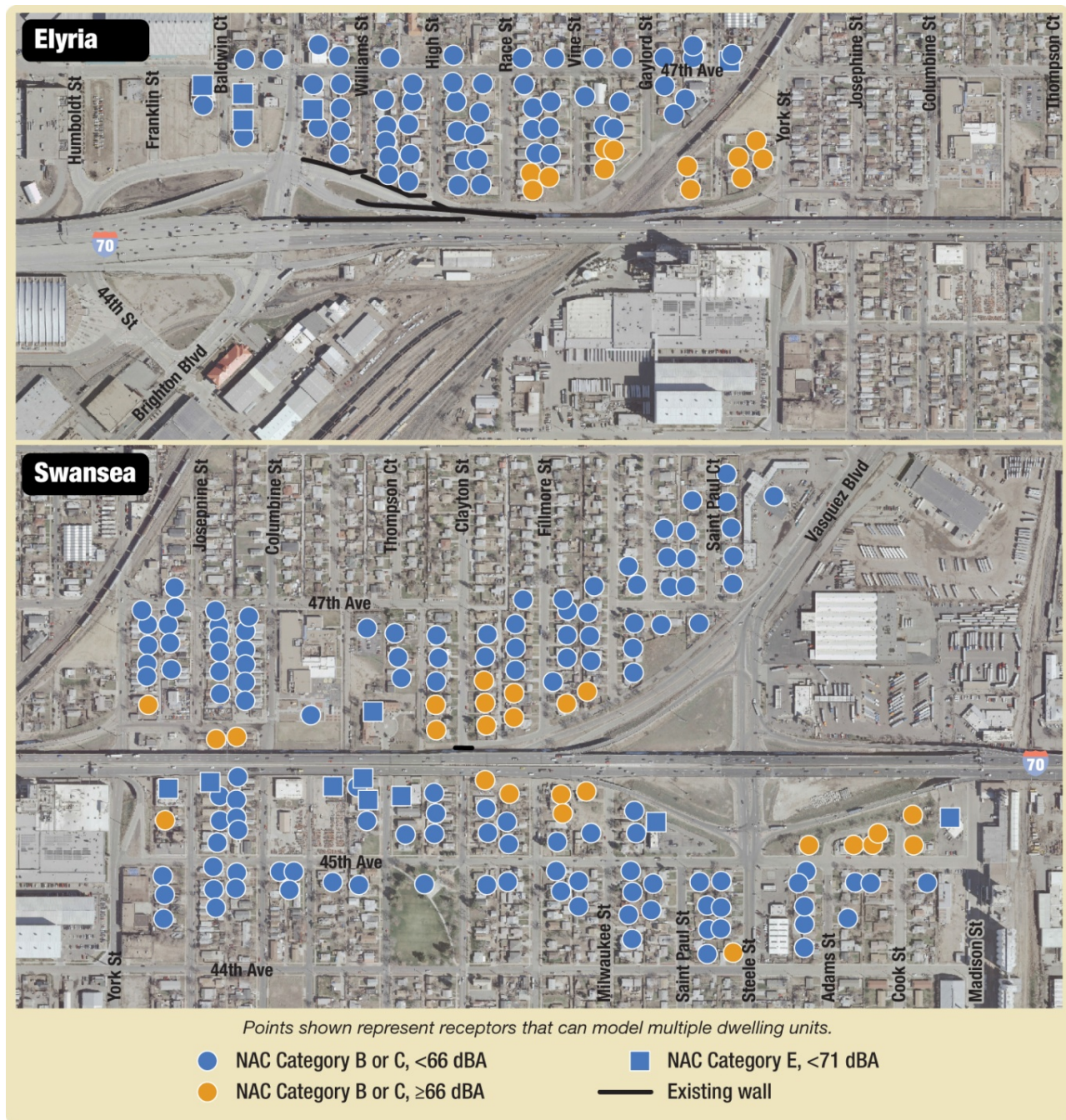
In Elyria, there is an existing noise wall along the westbound off ramp from I-70 to Brighton Boulevard and on the I-70 mainline west of the Brighton Boulevard exit. There is also a wall along 46th Avenue from Brighton Boulevard to High Street that blocks arterial street noise from the neighborhood. The effectiveness of the walls is shown in the model results. Of 155 dwelling units within Elyria, 27 (12 modeled receptors, see Figure 13) currently exceed their respective NAC thresholds. Existing noise levels range from 58.9 dBA to 71.2 dBA.

For Swansea, there are existing safety barriers on the edge of the I-70 viaduct that span from York Street to Clayton Street both north and south of I-70. The noise levels for the receptors range from 57.2 dBA to 71.4 dBA on either side of I-70. There are currently 23 impacted NAC B and C dwelling units north of I-70 (12 modeled receptors) and 23 impacted NAC B and C dwelling units south of I-70 (13 modeled receptors). The representative points modeled in TNM are summarized in Table 6 and shown in Figure 13.

Table 6. Existing Noise Conditions in Elyria and Swansea

	Elyria	Swansea North of I-70	Swansea South of I-70
Number of Dwelling Units	155	154	168
Number of Relative Impacts (\geq NAC)	27	23	23
Number of Substantial Impacts (\geq 10 dBA)	N/A	N/A	N/A
Leq(h) (dBA) Min	58.9	57.2	57.2
Leq(h) (dBA) Max	71.2	71.4	71.1

Figure 13. Elyria and Swansea Noise Impacts: Existing



Because the existing noise walls in the Elyria neighborhood are limited, new noise walls are recommended for each alternative where they currently exist, and in other areas where they are deemed to be feasible and reasonable, as required by CDOT. Noise walls were placed along the edges of mainline I-70, and along on and off ramps. Noise walls were not placed along the neighborhood side of frontage roads because the neighborhood roads would require frequent gaps in the noise walls and would make them less effective. The existing walls are analyzed as if they are new walls to optimize the wall locations and heights for each alternative. The analysis follows.

No-Action Alternative, North Option

The No-Action Alternative replaces the existing viaduct between Brighton Boulevard and Colorado Boulevard without adding any capacity. Typically, the No-Action Alternative noise levels on a project are used as a baseline for analysis of the Build Alternatives. However, the No-Action Alternative presents a unique situation for the I-70 corridor because it will construct a new roadway due to the poor condition of the existing viaduct. Because the No-Action Alternative has construction impacts, it will be analyzed with and without noise walls to determine where noise mitigation may be feasible and reasonable.

The TNM model was run initially for the No-Action Alternative, North Option with the projected 2035 volumes for no walls. Due to the construction of the new roadway, the existing noise walls along I-70 and the I-70 off ramp will need to be demolished. The noise wall along 46th Avenue will remain in place for the No-Action Alternative, North and South Options. The No-Action Alternative does not add capacity to I-70, but the volumes do increase significantly due to background growth in the region. The 2035 projected peak hour traffic volume often is over capacity, so many of the highway segments and some ramps were modeled using the CDOT loudest hour threshold. As preliminarily designed, no jersey barriers or noise walls were included in the base condition.

There is a different number of dwelling units and impacts between the North and South options because the design varies and there are different property takes for each option, which do not count as impacted dwelling units.

For the No-Action Alternative, North Option, of the 136 dwelling units modeled for this option in Elyria, 90 (38 modeled receptors) will exceed the NAC threshold if no walls are constructed. The noise levels would range from 64.2 dBA to 71.8 dBA, which is 2.6 dBA lower to 9.1 dBA greater than the existing noise range. Of the 90 impacted dwelling units, none experience a substantial increase in noise (see Figure 14).

In Swansea, the noise levels range from 61.1 dBA to 74.7 dBA, which is 3.1 dBA lower to 9.9 dBA greater than the existing noise levels. Of the 297 dwelling units modeled for this option, 229 (87 north of I-70 and 142 south of I-70, 109 modeled receptors, see Figure 14) are anticipated to exceed their respective NAC thresholds. Three of the 229 impacted dwelling units in Swansea would experience a substantial noise increase.

Figure 14. Elyria and Swansea Noise Impacts: No-Action Alternative, North Option



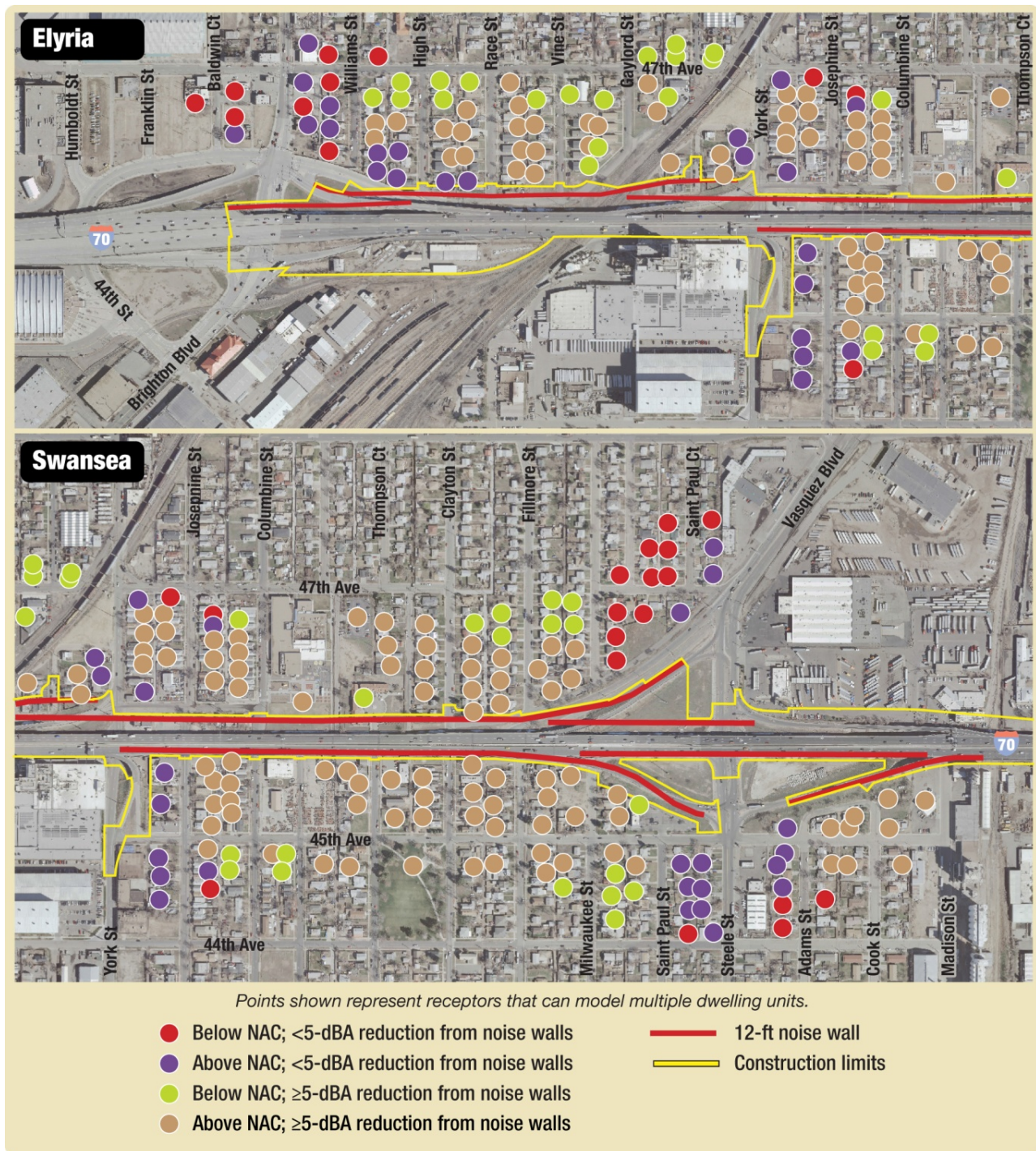
Based on the analysis performed for the No-Action Alternative, North Option, noise walls are recommended adjacent to the highway on the viaduct. The total length of the noise wall is proposed to be 2,660 feet in Elyria, 4,010 feet north of I-70 in Swansea, and 5,010 feet south of I-70 in Swansea. The wall was assumed to be located at the edge of pavement of the proposed roadway, which was on-structure over the proposed viaduct (see Figure 15). TNM analyzed wall heights of 10 feet, 12 feet, 14 feet, 16 feet, and 18 feet. Based on the results of the analysis, 12-foot walls in all three areas are feasible and achieve the reasonable criterion of a 7-dBA design reduction goal with the optimal cost-benefit index. Figure 15 shows the location of

the wall modeled in TNM to obtain the optimal cost-benefit ratio and Table 7 shows how much the receptors will benefit from the wall. The noise walls shown are based upon preliminary design and are subject to change.

Table 7. Elyria and Swansea Noise Impacts and Mitigation: No Action Alternative, North Option

	Elyria	Swansea North of I-70	Swansea South of I-70
Noise Impacts			
Number of Dwelling Units	136	130	167
Number of Relative Impacts (\geq NAC)	90	87	142
Number of Substantial Impacts (\geq 10 dBA)	0	0	3
Leq(h) (dBA) Min	64.2	61.1	63.2
Leq(h) (dBA) Max	71.8	71.0	74.7
Mitigation Criteria			
Number of Receivers with \geq 7-dBA reduction	70	66	90
Number of Receivers with \geq 5-dBA reduction	97	91	119
Optimal Proposed Wall Height (feet)	12	12	12
Length of Wall (feet)	2,660	4,010	5,010
Cost of Wall	\$1,436,400	\$2,165,400	\$2,705,400
dBA Benefit of Receivers with \geq 5-dBA reduction	704	689	961
Cost-Benefit Index	\$2,050	\$3,150	\$2,820
Is the Wall Feasible?	Yes	Yes	Yes
Is the Wall Reasonable?	Yes	Yes	Yes
Is the Wall Recommended for Advancement?	Yes	Yes	Yes

Figure 15. Elyria and Swansea Mitigation Analysis: No-Action Alternative, North Option



No-Action Alternative, South Option

Similar to the No-Action Alternative, North Option, the No-Action Alternative, South Option was analyzed with and without noise walls to determine where noise mitigation is feasible and reasonable.

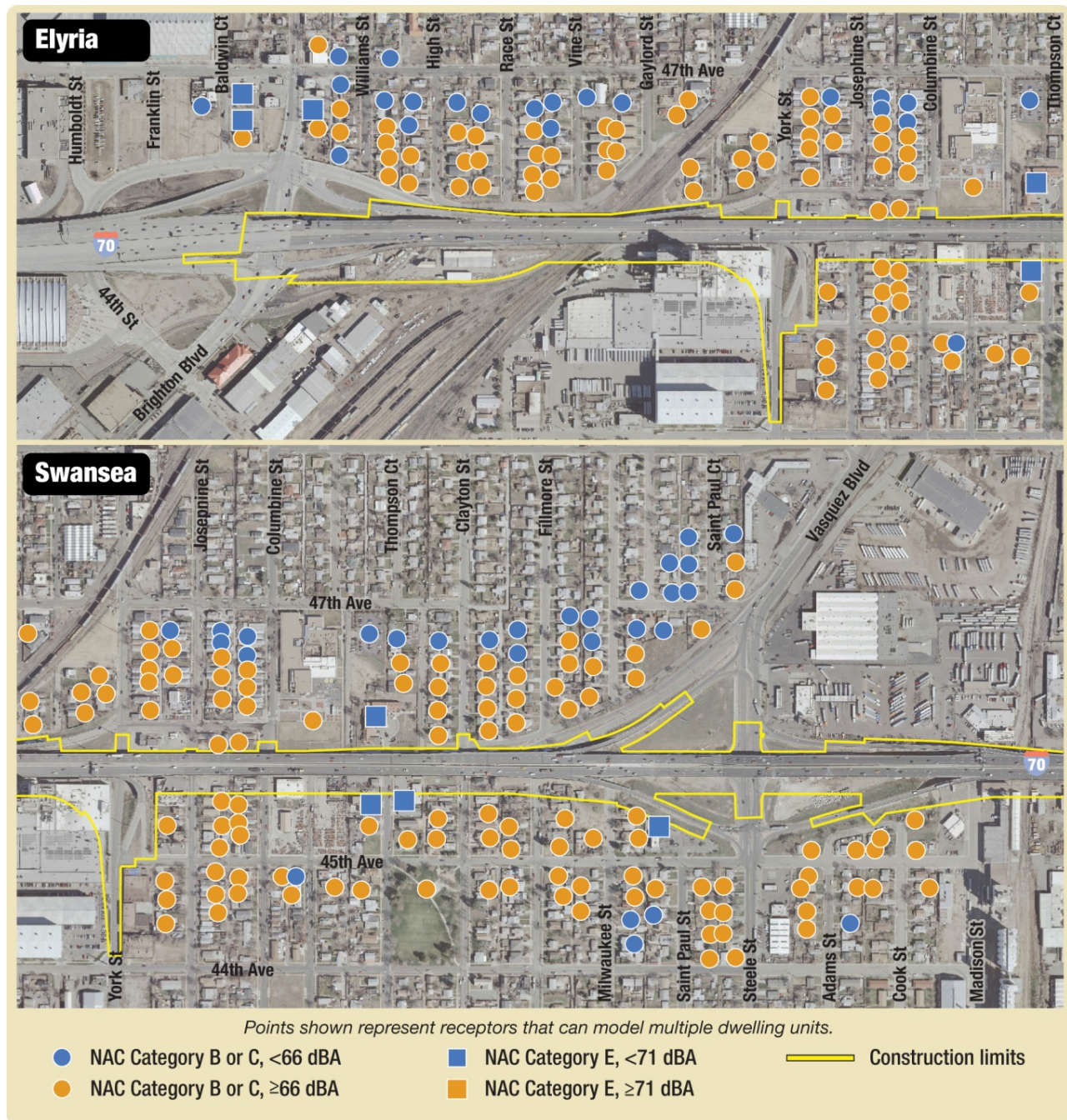
The TNM model was run initially for the No-Action Alternative, South Option with the projected 2035 volumes for no walls. The No-Action Alternative, South Option used the same peak-hour traffic volumes as the No-Action Alternative, North Option. The existing I-70 walls were not included in the analysis.

For the No-Action Alternative, South Option, significant impacts are anticipated to the NAC B dwelling units if no walls are constructed. This is due to higher traffic volumes traveling along I-70 in 2035 and no walls in the base scenario. There is a different number of dwelling units and impacts between the North and South options because the design varies and there are different property takes for each option, which do not count as impacted dwelling units.

In Elyria, noise levels are predicted to range from 64.0 dBA to 73.3 dBA, which is 0.2 dBA lower to 7.7 dBA greater than the existing Elyria range. Of the 123 dwelling units in Elyria modeled for this option, 87 (36 modeled receptors) are anticipated to exceed their respective NAC thresholds. None of the 87 impacted dwelling units would experience a substantial increase in noise.

In Swansea, noise levels are predicted to range from 60.2 dBA to 72.1 dBA, which ranges from 2.0 dBA lower to 10.1 dBA greater than existing Swansea noise levels. Of the 277 dwelling units modeled for this option, 217 (84 north of I-70 and 133 south of I-70, 103 modeled receptors) are anticipated to exceed their respective NAC thresholds. In addition, 11 of the 217 impacted dwelling units also would experience a substantial noise increase (see Figure 16).

Figure 16. Elyria and Swansea Noise Impacts: No-Action Alternative, South Option

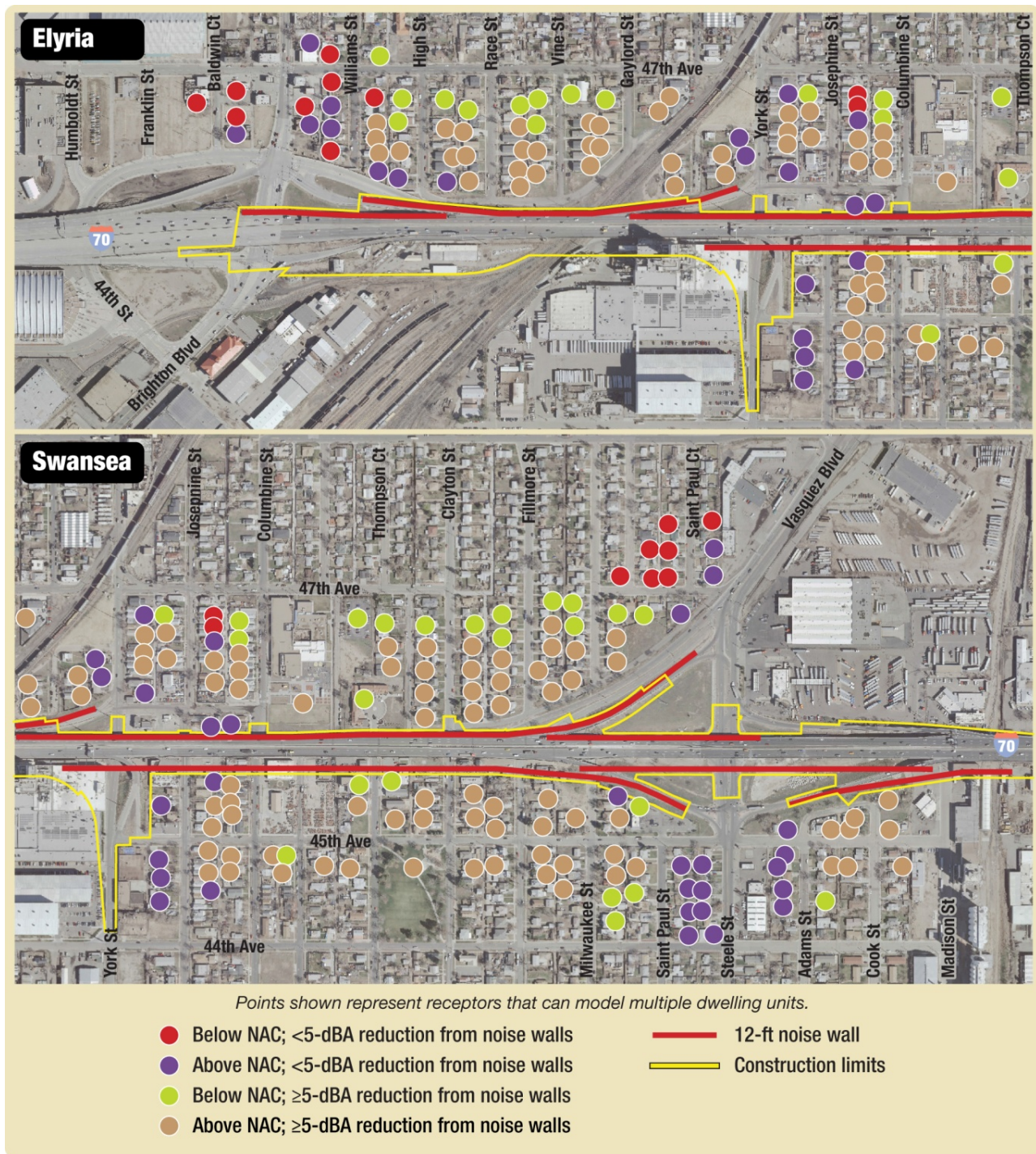


Based on the analysis performed for the No-Action Alternative, South Option, the total length of the noise wall is proposed to be 2,550 feet in Elyria, 4,130 feet north of I-70 in Swansea, and 5,280 feet south of I-70 in Swansea. The wall was assumed to be located at the edge of pavement of the proposed roadway, which was on-structure over the proposed viaduct. TNM analyzed wall heights of 10 feet, 12 feet, 14 feet, 16 feet, and 18 feet. Per TNM analysis, 12-foot walls in all three areas are feasible and achieve the 7-dBA design reduction goal with the optimal cost-benefit index, making them reasonable as well. Figure 17 shows the location of the wall modeled in TNM to obtain the optimal cost-benefit ratio and Table 8 shows how much the receptors will benefit from the wall. The noise walls shown are based upon preliminary design and are subject to change.

Table 8. Elyria and Swansea Noise Impacts and Mitigation: No-Action Alternative, South Option

	Elyria	Swansea North of I-70	Swansea South of I-70
Noise Impacts			
Number of Dwelling Units	123	132	145
Number of Relative Impacts (≥NAC)	87	84	133
Number of Substantial Impacts (≥10 dBA)	0	0	11
Leq(h) (dBA) Min	64.0	60.2	64.8
Leq(h) (dBA) Max	73.3	71.2	72.1
Mitigation Criteria			
Number of Receivers with ≥7-dBA reduction	49	61	48
Number of Receivers with ≥5-dBA reduction	86	88	102
Optimal Proposed Wall Height (feet)	12	12	12
Length of Wall (feet)	2,550	4,130	5,280
Cost of Wall	\$1,377,000	\$2,230,200	\$2,851,200
dBA Benefit of Receivers with ≥5-dBA reduction	611	681	720
Cost-Benefit Index	\$2,260	\$3,280	\$3,960
Is the Wall Feasible?	Yes	Yes	Yes
Is the Wall Reasonable?	Yes	Yes	Yes
Is the Wall Recommended for Advancement?	Yes	Yes	Yes

Figure 17. Elyria and Swansea Mitigation Analysis: No-Action Alternative, South Option



Revised Viaduct Alternative, North Option

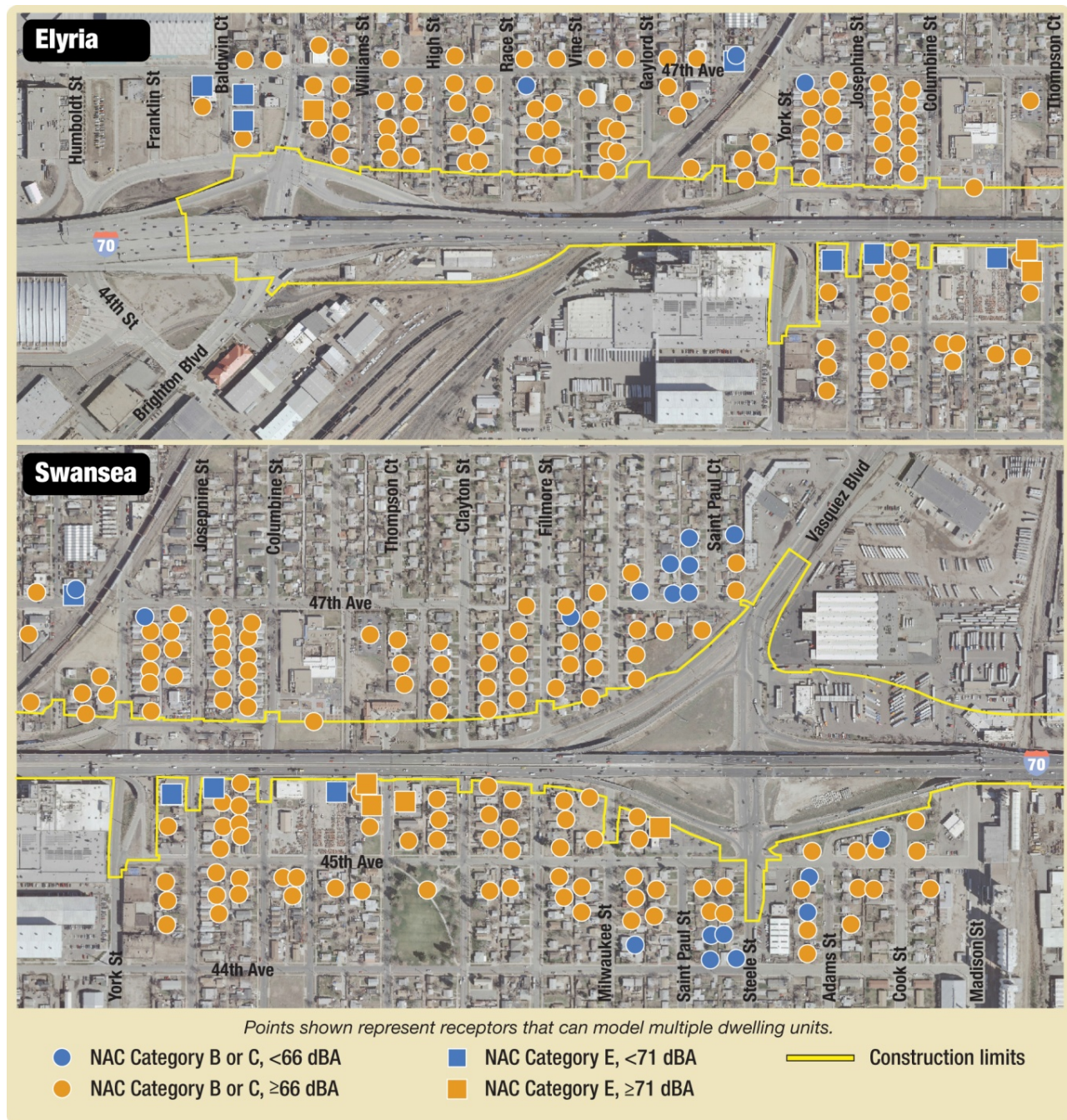
The Revised Viaduct Alternative replaces the existing I-70 viaduct between Brighton Boulevard and Colorado Boulevard. The Revised Viaduct Alternative, North Option was initially modeled in TNM without any walls as a worst-case scenario, which will be used as a baseline for the noise wall feasible/reasonable analysis. This alternative will include two additional travel lanes per direction, with a continuous acceleration and deceleration lane between Brighton Boulevard and Steele Street. In this model, no jersey barriers or noise walls were included. In the segment adjacent to the Elyria and Swansea Neighborhood, the highway and some of the ramps were modeled using the CDOT loudest hour threshold because, during the 2035 peak hour, the highway is anticipated to be at more than capacity.

There is a different number of dwelling units and impacts between the North and South options because the design varies and there are different property takes for each option, which do not count as impacted dwelling units.

Of the 133 dwelling units modeled for this option, 126 dwelling units (58 modeled receptors) within Elyria would exceed their respective NAC thresholds under the Revised Viaduct Alternative, North Option (see Figure 18), and eight of the 126 impacted dwelling units also would experience a substantial increase in noise. The noise levels in Elyria would range from 64.9 dBA to 72.2 dBA, which is approximately 0.3 dBA to 12.1 dBA higher than the existing noise range in Elyria.

Of the 306 dwelling units in Swansea modeled for this option, 267 (121 north of I-70 and 146 south of I-70, 132 modeled receptors) would exceed their respective NAC thresholds with the Revised Viaduct Alternative, North Option, and 33 of the 267 impacted dwelling units also would experience a substantial increase in noise. The noise levels in Swansea would range from 61.8 dBA to 77.4 dBA, which is approximately 5.7 dBA lower to 17.0 dBA greater than existing noise levels in Swansea.

Figure 18. Elyria and Swansea Noise Impacts: Revised Viaduct Alternative, North Option

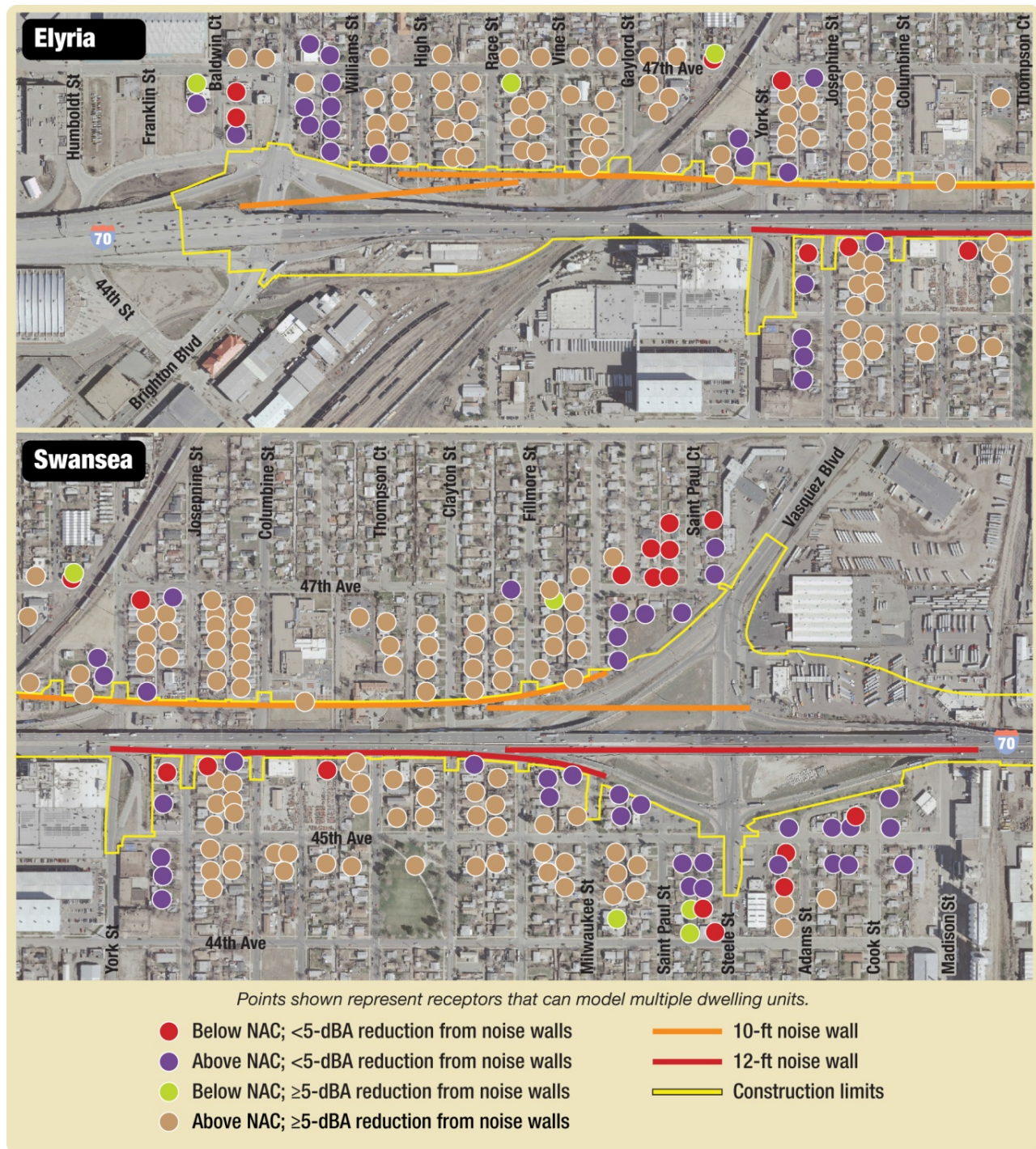


Based on the analysis performed for the Revised Viaduct Alternative, North Option, the total length of the noise wall is proposed to be 2,570 feet in Elyria, 3,520 feet north of I-70 in Swansea, and 4,250 feet south of I-70 in Swansea. TNM analyzed wall heights of 10 feet, 12 feet, 14 feet, 16 feet, and 18 feet. Per the TNM analysis, 10-foot walls to the north of I-70 in Elyria and Swansea and 12-foot walls to the south of I-70 in Swansea are feasible and achieve the 7-dBA design reduction goal with the optimal cost-benefit index under \$6,800, making them reasonable as well. Figure 19 shows the location of the wall modeled in TNM to obtain the optimal cost-benefit ratio, and Table 9 shows how much the receptors will benefit from the wall. The noise walls shown are based upon preliminary design and are subject to change.

Table 9. Elyria and Swansea Noise Impacts and Mitigation: Revised Viaduct Alternative, North Option

	Elyria	Swansea North of I-70	Swansea South of I-70
Noise Impacts			
Number of Dwelling Units	133	139	167
Number of Relative Impacts (≥NAC)	126	121	146
Number of Substantial Impacts (≥10 dBA)	8	7	26
Leq(h) (dBA) Min	64.9	63.0	61.8
Leq(h) (dBA) Max	72.2	76.6	77.4
Mitigation Criteria			
Number of Receivers with ≥7-dBA reduction	53	48	41
Number of Receivers with ≥5-dBA reduction	98	101	93
Optimal Proposed Wall Height (feet)	10	10	12
Length of Wall (feet)	2,570	3,520	4,250
Cost of Wall	\$1,156,500	\$1,584,000	\$2,295,000
dBA Benefit of Receivers with ≥5-dBA reduction	680	672	634
Cost-Benefit Index	\$1,700	\$2,360	\$3,630
Is the Wall Feasible?	Yes	Yes	Yes
Is the Wall Reasonable?	Yes	Yes	Yes
Is the Wall Recommended for Advancement?	Yes	Yes	Yes

Figure 19. Elyria and Swansea Mitigation Analysis: Revised Viaduct Alternative, North Option



Revised Viaduct Alternative, South Option

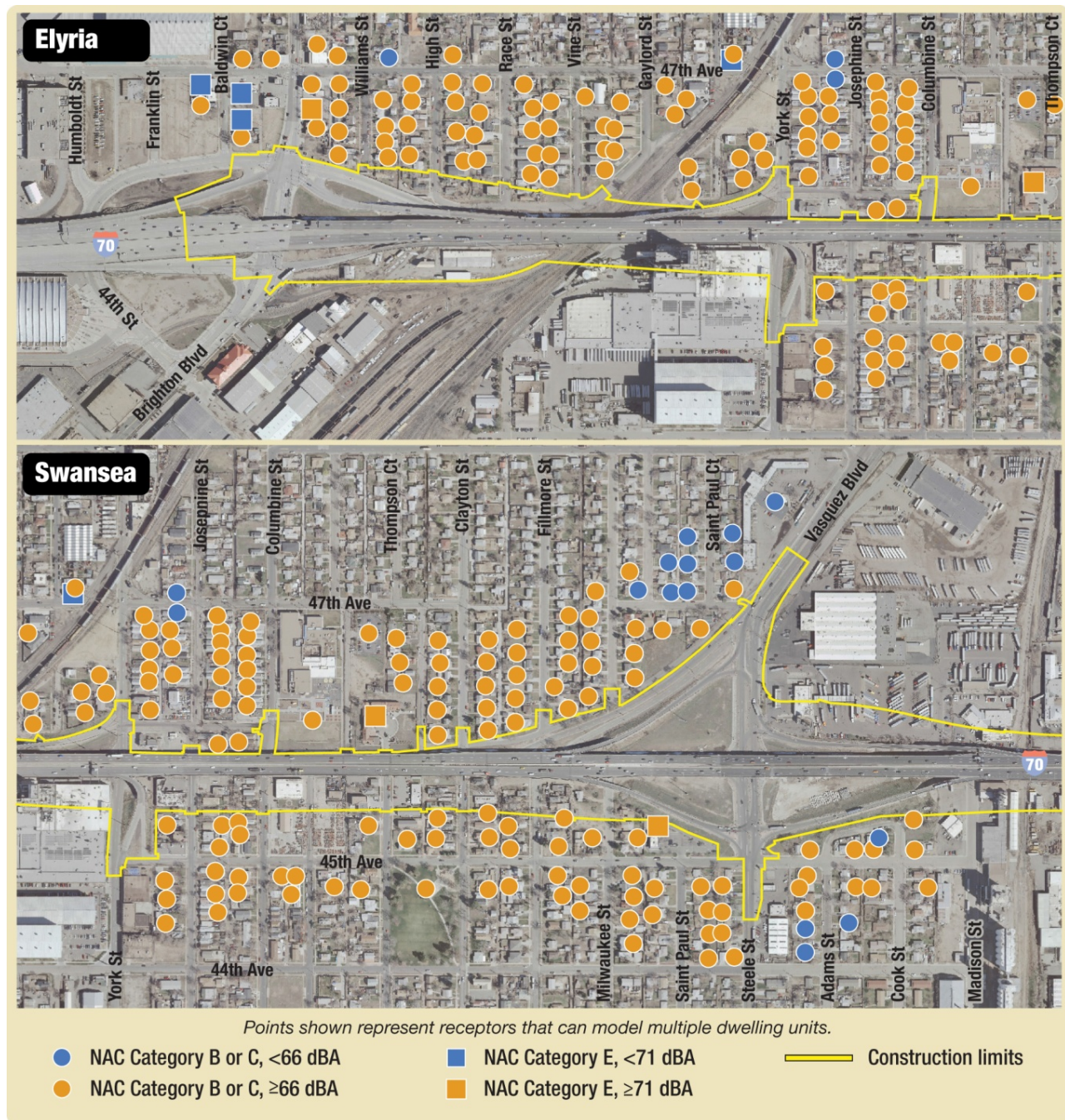
The Revised Viaduct Alternative replaces the existing I-70 viaduct between Brighton Boulevard and Colorado Boulevard. The Revised Viaduct Alternative, South Option was initially modeled in TNM without any walls as a worst-case scenario. There are two additional proposed travel lanes per direction with a continuous acceleration and deceleration lane between Brighton Boulevard and Steele Street. In this model, no jersey barriers or noise walls were included. Many highway segments and some ramps were modeled using the CDOT loudest hour threshold, because the highway is anticipated to be running at greater than capacity during the 2035 peak hour.

There is a different number of dwelling units and impacts between the North and South options because the design varies and there are different property takes for each option, which do not count as impacted dwelling units.

With the Revised Viaduct Alternative, South Option, 123 of the 129 dwelling units (56 modeled receptors) modeled for this option in Elyria would exceed their respective NAC thresholds, and six of the 101 impacted dwelling units also would experience a substantial increase in noise (Figure 20). The noise levels in Elyria would range from 65.6 dBA to 72.5 dBA within the project limits for this option, which is approximately 0.9 dBA to 12.1 dBA greater than the existing noise range in Elyria.

Of the 287 dwelling units in Swansea modeled for this option, 255 dwelling units (126 north of I-70 and 129 south of I-70, 126 modeled receptors) would exceed their respective NAC thresholds with the Revised Viaduct Alternative, South Option. Of the 255 impacted dwelling units, 37 also experience a substantial increase in noise. The noise levels in Swansea range from 61.3 dBA to 73.9 dBA, which is approximately 2.9 dBA lower to 13.6 dBA greater than the existing noise levels in Swansea.

Figure 20. Elyria and Swansea Noise Impacts: Revised Viaduct Alternative, South Option



Based on the analysis performed for the Revised Viaduct Alternative, South Option, the total length of the noise wall is proposed to be 3,050 feet in Elyria, 3,790 feet north of I-70 in Swansea, and 4,320 feet south of I-70 in Swansea.

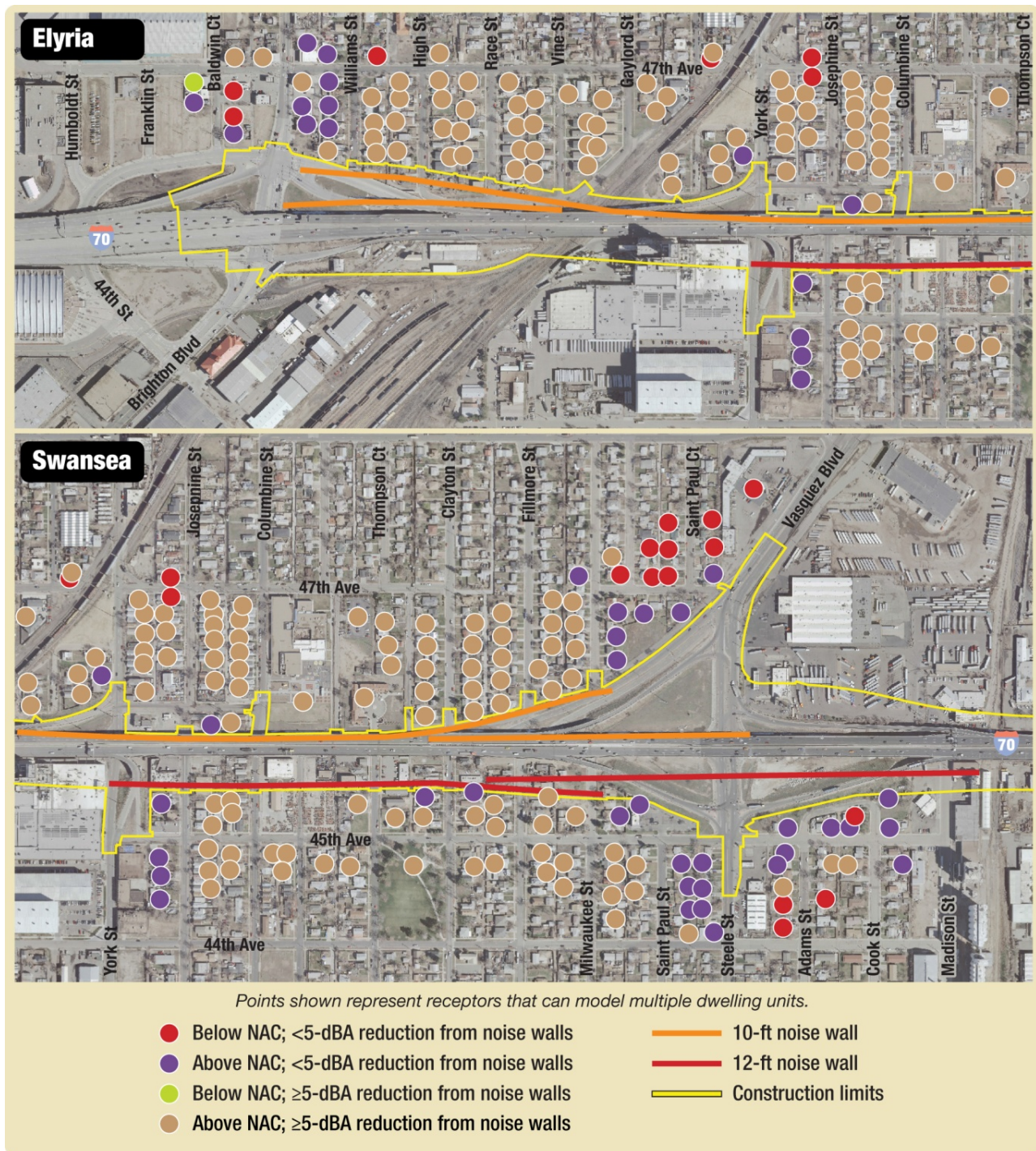
The wall was assumed to be located at the edge of pavement of the proposed roadway, which was on-structure over the proposed viaduct. TNM analyzed wall heights of 10 feet, 12 feet, and 14 feet. Per TNM analysis, 10-foot walls along the north side of I-70 in Elyria and Swansea and 12-foot walls on the south side of I-70 in Swansea are feasible and achieve the 7-dBA design reduction goal with the optimal cost-benefit index under \$6,800, making them reasonable as well. Figure 21 shows the location of the wall modeled in

TNM to obtain the optimal cost-benefit ratio and Table 10 shows how much the receptors will benefit from the wall. The noise walls shown are based upon preliminary design and are subject to change.

Table 10. Elyria and Swansea Noise Impacts and Mitigation Results: Revised Viaduct Alternative, South Option

	Elyria	Swansea North of I-70	Swansea South of I-70
Noise Impacts			
Number of Dwelling Units	129	150	137
Number of Relative Impacts (≥NAC)	123	126	129
Number of Substantial Impacts (≥10 dBA)	6	0	37
Leq(h) (dBA) Min	65.6	62.0	61.3
Leq(h) (dBA) Max	72.5	72.4	73.9
Mitigation Criteria			
Number of Receivers with ≥7-dBA reduction	55	52	29
Number of Receivers with ≥5-dBA reduction	103	108	83
Optimal Proposed Wall Height (feet)	10	10	12
Length of Wall (feet)	3,050	3,790	4,320
Cost of Wall	\$1,372,500	\$1,705,500	\$2,332,800
dBA Benefit of Receivers with ≥5-dBA reduction	735	725	550
Cost-Benefit Index	\$1,870	\$2,360	\$4,240
Is the Wall Feasible?	Yes	Yes	Yes
Is the Wall Reasonable?	Yes	Yes	Yes
Is the Wall Recommended for Advancement?	Yes	Yes	Yes

Figure 21. Elyria and Swansea Mitigation: Revised Viaduct Alternative, South Option



Partial Cover Lowered Alternative, Basic Option

The Partial Cover Lowered Alternative removes the existing I-70 viaduct between Brighton Boulevard and Colorado Boulevard, lowering the highway below ground level in this area, while adding two additional lanes in each direction. This alternative incorporates highway covers, roadway alignments, and interchange configurations that are different for each option. This alternative also adds capacity to the rest of the corridor. There is a different number of dwelling units and impacts between the Basic and Modified options because the design varies and there are different property takes for each option, which do not count as impacted dwelling units. All retaining walls were included in the TNM model, but no jersey barriers or noise walls were analyzed initially. The Partial Cover Lowered Alternative, Basic Option has a highway cover between Clayton Street and Columbine Street, with 46th Avenue operating as a one-way road on each side of the highway (westbound on the north side and eastbound on the south side) adjacent to the I-70 mainline. The remainder of the lowered highway is exposed.

Of the 127 dwelling units in Elyria, 81 dwelling units (36 modeled receptors) are anticipated to exceed the NAC threshold with the Partial Cover Lowered Alternative, Basic Option, which has the cover between Columbine Street and Clayton Street (see Figure 22). Of these 81 impacted dwelling units, 19 also would experience a substantial increase in noise. The noise levels in Elyria would range from 61.2 dBA to 76.1 dBA, which is 0.1 dBA lower to 15.4 dBA greater than existing noise levels.

In the Partial Cover Lowered Alternative, Basic Option in Swansea, of the 319 dwelling units, 63 dwelling units (28 north of I-70 and 35 south of I-70, 36 modeled receptors) would exceed their respective NAC thresholds with the highway cover between Columbine Street and Clayton Street (see Figure 22). Of these 63 impacted dwelling units, none would experience a substantial increase in noise. The noise levels in Swansea would range from 53.7 dBA to 75.0 dBA, which is 8.0 dBA lower to 8.6 dBA greater than existing noise levels.

While the maximum noise levels are similar to the Revised Viaduct Alternative, this is due typically to the impacted dwelling units being located near ramps and arterial streets. Unlike the Revised Viaduct Alternative, however, the impacts are experienced only by the first several rows of dwelling units. The representative points modeled in TNM are summarized in Figure 22.

Figure 22. Elyria and Swansea Noise Impacts: Partial Covered Lowered Alternative, Basic Option



Walls along 46th Avenue were placed on the side of the street adjacent to the I-70 mainline. The walls were assumed to be located at the edge of pavement of the proposed roadway. Based on the mitigation analysis performed, the total length of the noise wall complex is proposed to be approximately 1,500 feet in Elyria, 1,630 feet in Swansea north of I-70, and 1,920 feet in Swansea south of I-70.

TNM analyzed wall heights of 8, 10, 12, 14, 16, 18, and 20 feet. The walls were found to be feasible in all three areas, however, only the walls in Elyria and Swansea north of I-70 were found to be reasonable. The walls were not found to be reasonable south of I-70 in Swansea because the cover in between Clayton Street and Columbine Street provides sufficient noise reduction for the surrounding dwelling units. Descriptions of the locations and heights of the noise walls that were determined to obtain the best cost-benefit index in each area are shown below.

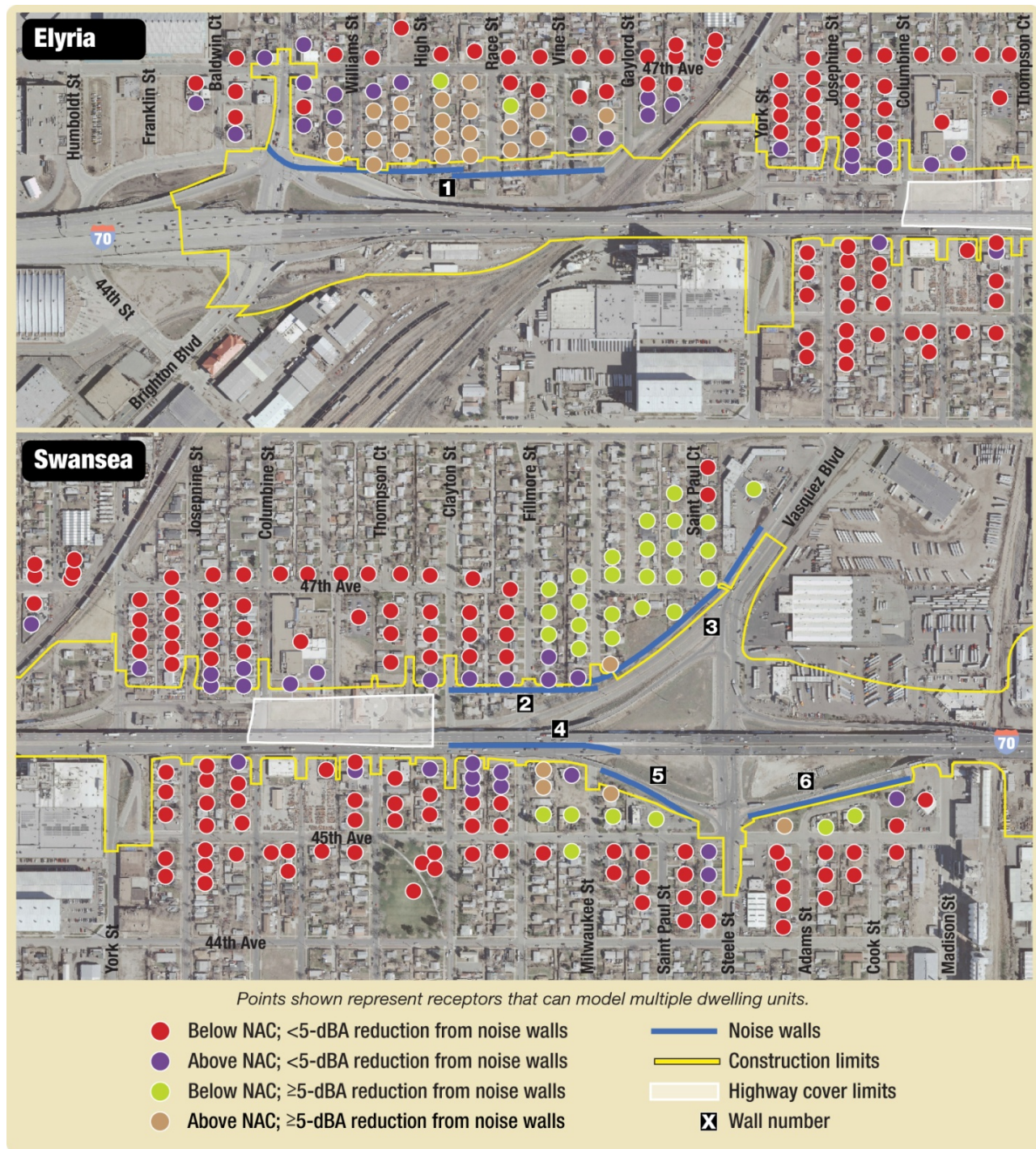
1. 18 foot wall; westbound along 46th Avenue from the UPRR tracks to the Brighton Boulevard off ramp
2. 19 foot wall; westbound along 46th Avenue from Clayton Street to Milwaukee Street
3. 20 foot wall; westbound along the Steele Street westbound on ramp
4. 19 foot wall; eastbound along 46th Avenue from Clayton Street to Milwaukee Street
5. 18 foot wall; eastbound along the Steele Street eastbound off ramp
6. 16 foot wall; eastbound along the Steele Street eastbound on ramp

Figure 23 shows the location of the walls modeled in TNM to obtain the optimal cost-benefit ratio and Table 11 shows how much the receivers will benefit from the wall.

Table 11. Elyria and Swansea Noise Impacts and Mitigation Analysis: Partial Cover Lowered Alternative, Basic Option

	Elyria	Swansea North of I-70	Swansea South of I-70
Impacts			
Number of Dwelling Units	127	151	168
Number of Relative Impacts (\geq NAC)	81	28	35
Number of Substantial Impacts (\geq 10 dBA)	19	0	0
Leq(h) (dBA) Min	61.2	53.7	56.8
Leq(h) (dBA) Max	76.1	72.3	75.0
Mitigation Criteria			
Number of Receivers with \geq 7-dBA reduction	18	12	3
Number of Receivers with \geq 5-dBA reduction	57	48	24
Optimal Proposed Wall Height (feet)	18	19, 20	16, 18, 19
Length of Wall (feet)	1,500	1,630	1,920
Cost of Wall	\$1,218,240	\$1,437,700	\$1,519,900
dBA Benefit of Receivers with \geq 5-dBA reduction	387	309	138
Cost-Benefit Index	\$3,150	\$4,650	\$11,010
Is the Wall Feasible?	Yes	Yes	Yes
Is the Wall Reasonable?	Yes	No	No
Is the Wall Recommended for Advancement?	Yes	No	No

Figure 23. Elyria and Swansea Mitigation: Partial Covered Lowered Alternative, Basic Option



Partial Cover Lowered Alternative, Modified Option

The Partial Cover Lowered Alternative removes the existing I-70 viaduct between Brighton Boulevard and Colorado Boulevard, lowering the highway below ground level in this area, while adding two additional lanes in each direction. This alternative incorporates highway covers, roadway alignments, and interchange configurations that are different for each option. This alternative also adds capacity to the rest of the corridor. There is a different number of dwelling units and impacts between the Basic and Modified options because the design varies and there are different property takes for each option, which do not count as impacted dwelling units. All retaining walls were included in the TNM model, but no jersey barriers or noise walls were analyzed initially. The Partial Cover Lowered Alternative, Modified Option has a highway cover between Clayton Street and Columbine Street, and also removes the Steele Street/Vasquez Boulevard interchange to include an additional cover in that area that extends from approximately 210 feet west to 580 feet east of the overpass area. The 46th Avenue frontage road will be designed as a two-way street on both the north and south sides of the highway. However, it would be removed between Clayton Street and Columbine Street on the north side to allow for a seamless connection between Swansea Elementary School and the I-70 cover. Vehicular north/south connectivity across the highway at Josephine Street will be eliminated and replaced with a bicycle/pedestrian bridge. The remainder of the lowered highway is exposed.

Of the 125 dwelling units in Elyria, 84 dwelling units (39 modeled receptors) are anticipated to exceed their respective NAC thresholds with the Partial Cover Lowered Alternative, Modified Option, which has two highway covers. Of these 84 impacted dwelling units, 14 also would experience a substantial increase in noise. The noise levels in Elyria would range from 61.4 dBA to 75.7 dBA, which is 0.3 dBA to 14.8 dBA greater than the existing noise levels.

In Swansea, of the 294 dwelling units, 52 dwelling units (20 north of I-70 and 32 south of I-70, 25 modeled receptors) would exceed their respective NAC thresholds with the Partial Cover Lowered Alternative, Modified Option, which has two covers. None of the 52 impacted dwelling units would experience a substantial noise increase. The noise levels for the Partial Cover Lowered Alternative, Modified Option range from 52.4 dBA to 74.6 dBA, which is 8.4 dBA lower to 7.4 dBA greater than existing noise levels.

While the maximum noise levels are similar to the Revised Viaduct Alternative, this is due typically to the impacted dwelling units being located near ramps and arterial streets. Unlike the Revised Viaduct Alternative, however, the impacts are only experienced by the first several rows of dwelling units. The representative points modeled in TNM are summarized in Figure 24.

Figure 24. Elyria and Swansea Noise Impacts: Partial Covered Lowered Alternative, Modified Option



Walls along 46th Avenue were placed on the side of the street adjacent to the I-70 mainline. The walls were assumed to be located at the edge of pavement of the proposed roadway. Based on the mitigation analysis performed, the total length of the noise wall complex is proposed to be approximately 1,530 feet in Elyria, 2,870 feet along the north side of I-70 in Swansea, and approximately 3,480 feet along the south side of I-70 in Swansea.

TNM analyzed wall heights of 8, 10, 12, 14, 16, 18, and 20 feet. The walls were found to not be feasible or reasonable in the Swansea area north or south of I-70. In contrast, in Elyria north of I-70, walls were found to be feasible and reasonable. The walls were not found to be reasonable in either area of Swansea because the two covers in the area provide enough noise reduction to the surrounding dwelling units.

Descriptions of the locations and heights of the noise walls that were determined to obtain the best cost-benefit index in each area are shown below.

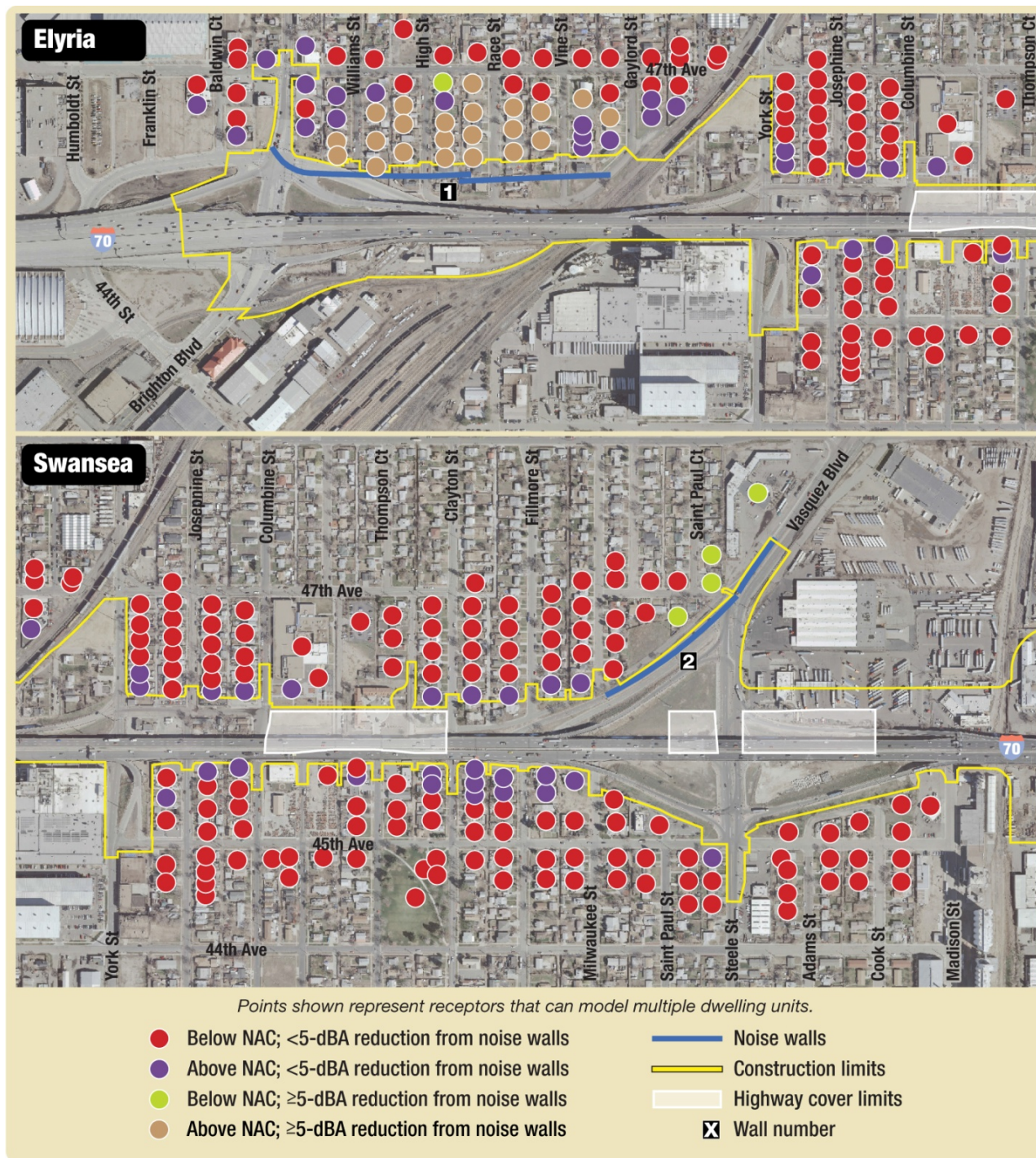
1. 19 foot wall; westbound along 46th Avenue from the UPRR tracks to the Brighton Boulevard off ramp
2. 11 foot wall; westbound along the Steele Street to 46th Avenue westbound connection

Figure 25 shows the location of the walls modeled in TNM to obtain the optimal cost-benefit ratio and Table 12 shows how much the receivers will benefit from the wall.

Table 12. Elyria and Swansea Noise Impacts and Mitigation: Partial Cover Lowered Alternative, Modified Option

	Elyria	Swansea North of I-70	Swansea South of I-70
Impacts			
Number of Dwelling Units	125	130	164
Number of Relative Impacts (≥NAC)	84	20	32
Number of Substantial Impacts (≥10 dBA)	14	0	0
Leq(h) (dBA) Min	61.4	52.4	56.7
Leq(h) (dBA) Max	75.7	72.8	74.6
Mitigation Criteria			
Number of Receivers with ≥7-dBA reduction	27	2	0
Number of Receivers with ≥5-dBA reduction	55	7	0
Optimal Proposed Wall Height (feet)	19	11	8
Length of Wall (feet)	1,530	1,150	3,480
Cost of Wall	\$1,306,440	\$566,280	\$1,252,080
dBA Benefit of Receivers with ≥5-dBA reduction	384	44	0
Cost-Benefit Index	\$3,400	\$12,930	\$0
Is the Wall Feasible?	Yes	No	No
Is the Wall Reasonable?	Yes	No	No
Is the Wall Recommended for Advancement?	Yes	No	No

Figure 25. Elyria and Swansea Mitigation Analysis: Partial Covered Lowered Alternative, Modified Option



6.3.3. Northfield Stapleton Commercial Area

In Northfield Stapleton, there are three hotels near Quebec Street and three restaurants in the shopping area within the study limits of 500 feet within the edge of travel. All of these dwelling units are NAC E, and must experience noise levels of 71 dBA or above to be considered for abatement. Typically, NAC E land uses do not wish for mitigation because of conflicts with commercial visibility and roadway access. However, due to surrounding area growth, and because some of the proposed future alignments result in major changes to this area, future traffic volumes are anticipated to be substantially higher. In addition to the three hotels near Quebec Street, a hotel is located by the Havana Street interchange. At the time of the analysis this hotel did not have an outdoor use therefore a noise analysis was not required at this location. However, an analysis was performed to identify any possible impacts to future outdoor uses. The analysis showed that there will be no impact to this property with any of the alternatives.

Existing

According to the model, none of the dwelling units in this area experience levels of traffic noise that exceed the NAC. The existing noise levels range from 59.0 dBA to 64.9 dBA, which is well below the 71-dBA threshold. The representative points modeled in TNM are summarized in Figure 26.

Figure 26. Northfield Stapleton Noise Impacts: Existing Conditions and No-Action Alternative



No-Action Alternative

For the 2035 No-Action Alternative, there will be no changes to the lane configuration on I-70 adjacent to the NAC E land uses near Quebec Street or in the Northfield Stapleton commercial area. However, due to growth in the surrounding area, there are anticipated to be significantly higher traffic volumes. The location and number of lanes are the same for the No-Action Alternative, North and South Options through this segment of I-70. The roadway configurations are proposed to remain the same as the existing condition, so the TNM model used for the existing noise condition was modified to include the 2035 traffic volumes and used to estimate future noise levels.

For the No-Action Alternative, the predicted noise levels would range from 61.8 dBA to 66.3 dBA, which does not exceed the NAC E criteria of 71 dBA for any of the six dwelling units. In addition, none of the six dwelling units experience a substantial noise increase. The changes from the existing conditions to the No-Action Alternative with regard to noise levels will be between 1.4 dBA and 2.8 dBA. Because no impacts will occur under the No-Action Alternative, Figure 26 is representative of the No-Action Alternative as well.

Build Alternatives

All of the Build Alternatives east of Quebec Street have the same roadway footprint for the general-purpose lanes. The peak-hour volumes vary slightly, but to simulate worst-case noise levels, the highest of the traffic volume options was analyzed and only one model was created for the general-purpose lanes in this section.

None of the dwelling units in this area exceed the NAC threshold under the Build Alternatives, either with general-purpose lanes or with managed lanes. The noise levels at the modeled dwelling units in the General-Purpose Lanes Option would range from 62.4 dBA to 69.4 dBA, which is an increase of 3.4 dBA to 4.5 dBA greater than existing noise levels. In contrast, the noise levels for the Managed Lanes Option are slightly higher, ranging from 62.7 dBA to 69.9 dBA, which is 3.7 dBA to 5.0 dBA greater than existing noise levels. For both options, none of the six dwelling units exceed their respective NAC thresholds or experience a substantial increase.

Based on this information, no additional study will be performed to analyze noise walls in this section. Because no impacts will occur for the Build Alternatives, the impacts remain the same as Figure 26 and are shown in Table 13.

Table 13. Noise Impacts: Northfield Stapleton

Alternative/ Option	Predicted Noise Range (dBA)		Number of Dwelling Units	Number of Dwelling Units that Exceed NAC Threshold	Number of Dwelling Units with a Substantial Noise Increase
	Min	Max			
Existing	59.0	64.9	6	0	0
No-Action	61.8	66.3	6	0	0
Build Alternatives					
General- Purpose Lanes Option	62.4	69.4	6	0	0
Managed Lanes Option	62.7	69.9	6	0	0

6.3.4. Montbello Neighborhood

The area north of I-70 near Peoria Street includes hotels, which are NAC E with an impact threshold of 71 dBA, and a Montessori school, which is NAC C with an impact threshold of 66 dBA. The hotel on the

northeast corner of the I-70 and Peoria Street interchange has an outdoor pool area. The two-story hotel at the northwest corner of the I-70 and Peoria Street interchange is an extended-stay hotel with patios or balconies in each room. There are 98 dwelling units represented by 12 receptors in the model (at six locations, there are two receptors with different heights to represent the two stories).

The Montbello Neighborhood is located northeast of the I-70/I-225 interchange and just west of Chambers Road. The land use in this area is mostly residential, with some commercial areas immediately to the north of I-70 and commercial and industrial uses to the south. There is an existing noise wall, 10 feet in height, along a ramp on the north side of I-70. The existing noise wall is very effective at blocking traffic noise for this neighborhood. Under the Build Alternatives, the existing noise wall will be demolished based on the proposed roadway construction limits.

Existing

Near Peoria Street, the existing NAC C dwelling unit experiences a 61 dBA noise level. At the hotels, the loudest hour noise levels range from 60.6 dBA to 68.7 dBA, which do not exceed the NAC E threshold of 71 dBA. The modeled receptors are shown in Figure 27.

The existing noise wall along the northernmost ramp of I-70 to Chambers Road and the existing buildings near the highway assist in blocking the traffic noise to the NAC B dwelling units. None of the dwelling units in the Montbello Neighborhood experience noise levels that exceed the NAC. The existing noise limits range from 57.3 dBA to 63.9 dBA for the NAC B receptors. The modeled receptors and resulting noise levels are shown in Figure 28.

Figure 27. Peoria Street Noise Impacts: Existing Conditions and No-Action Alternative



Figure 28. Montbello Noise Impacts: Existing Conditions and No-Action Alternative



No-Action Alternatives

For the 2035 No-Action Alternative, there will be no changes to the lane configuration on I-70 adjacent to the Montbello Neighborhood. Due to surrounding area growth, significantly higher volumes on the highway are anticipated. The TNM model was run using the same lane configuration and receptors as the existing model, but with the projected 2035 volumes. The No-Action Alternative, North and South Options were modeled as one option in this section because the impacted section of I-70 is several miles away from the dwelling units in this area.

For the No-Action Alternative, none of the modeled receptors near Peoria Street are anticipated to exceed the NAC threshold. The increase in volumes on the corridor will result in the noise levels to range from 61.5 dBA to 70.8 dBA, an increase of noise levels from 0.8 dBA to 2.1 dBA over existing noise levels, which is not considered a significant noise increase. Because no impacts will occur under the No-Action Alternative, North and South Options, the impacts remain the same as Figure 27.

In the Montbello Neighborhood, none of the modeled NAC B receptors are anticipated to be impacted due to the higher volumes of traffic that will travel along I-70 in the 2035 No-Action Alternative. Noise levels in the Montbello Neighborhood are expected to range from 58.7 dBA to 65.4 dBA, an increase in noise levels of 1.4 dBA to 1.5 dBA greater than existing noise levels, which is not considered a significant noise increase. Because no impacts will occur under the No-Action Alternative, North and South Options, the impacts remain the same as Figure 28.

Build Alternatives

All of the Build Alternative Options (General-Purpose Lanes Option and Managed Lanes Option) east of Quebec Street have the same roadway footprint in this area. Two additional through-lanes of travel are proposed on I-70 for both Build Alternatives in this area. The peak-hour volumes vary slightly, but to simulate worst-case noise levels, the highest levels for the alternatives were analyzed.

Noise levels in the Peoria Street area would range from 62.7 dBA to 71.7 dBA for the General-Purpose Lanes Option, which is 2.1 dBA to 3.0 dBA greater than existing noise levels. In contrast, noise levels for the Managed Lanes Option would be slightly lower, from 62.7 dBA to 71.1 dBA, which is 2.1 dBA to 2.4 dBA greater than existing noise levels. Of the 100 dwelling units, one dwelling unit would exceed its NAC threshold in both options and one of the 100 dwelling units would experience a substantial increase in noise levels. The results of the Build Alternatives are shown in Figure 29.

Figure 29. Peoria Street Noise Impacts: Build Alternatives



Along Peoria Street, one dwelling unit, the hotel pool area east of Peoria Street, will exceed the NAC E threshold, so a noise wall analysis was performed for this area. A 270-foot long noise wall was modeled near the impacted dwelling unit, but was found to be neither feasible nor reasonable. One impacted property typically makes noise walls cost prohibitive to construct, and commercial areas often prefer visibility from the highway, which would be altered if noise walls were to be constructed. As a part of the FEIS process, the business owner will be surveyed on whether or not a noise wall is desired. Additionally, to provide the 7 dBA reduction to a single dwelling unit, the wall can be no more than 1,058 square feet. At eight feet tall, such a wall would be just over 100 feet in length. To be effective, the wall would have to be built right next to the noise sensitive area, which in this case would be off of CDOT right-of-way. Therefore, no additional analysis was performed for this option as a part of this SDEIS.

Table 14 summarizes mitigation measures for the Peoria Street area. Figure 30 and Figure 31 show the location of the noise wall modeled in TNM for the Peoria Street area to obtain the design goal and the optimal cost-benefit index. The noise walls shown are based upon preliminary design and are subject to change.

Table 14. Peoria Street Noise Impacts and Mitigation Summary

Peoria Results	Existing	No-Action Alternative	Build Alternatives	
			General-Purpose Lanes Option	Managed Lanes Option
Noise Impacts				
Number of Dwelling Units	100	100	100	100
Number of Relative Impacts (≥NAC)	0	1	1	1
Number of Substantial Impacts (≥10 dBA)	0	0	0	0
Leq(h) (dBA) Min	60.6	61.5	62.7	62.7
Leq(h) (dBA) Max	68.7	70.8	71.7	71.1
Mitigation Criteria				
Number of Receivers with ≥7-dBA reduction	N/A	N/A	0	0
Number of Receivers with ≥5-dBA reduction			0	0
Optimal Proposed Wall Height (feet)			18	20
Length of Wall (feet)			270	270
Cost of Wall			\$215,460	\$239,400
dBA Benefit of Receivers with ≥5-dBA reduction			8	7
Cost-Benefit Index			\$27,980	\$34,200
Is the Wall Feasible?	N/A	N/A	No	No
Is the Wall Reasonable?			No	No
Is the Wall Recommended for Advancement?			No	No

Figure 30. Peoria Street Mitigation Analysis: Build Alternative, General Purpose Lanes Option

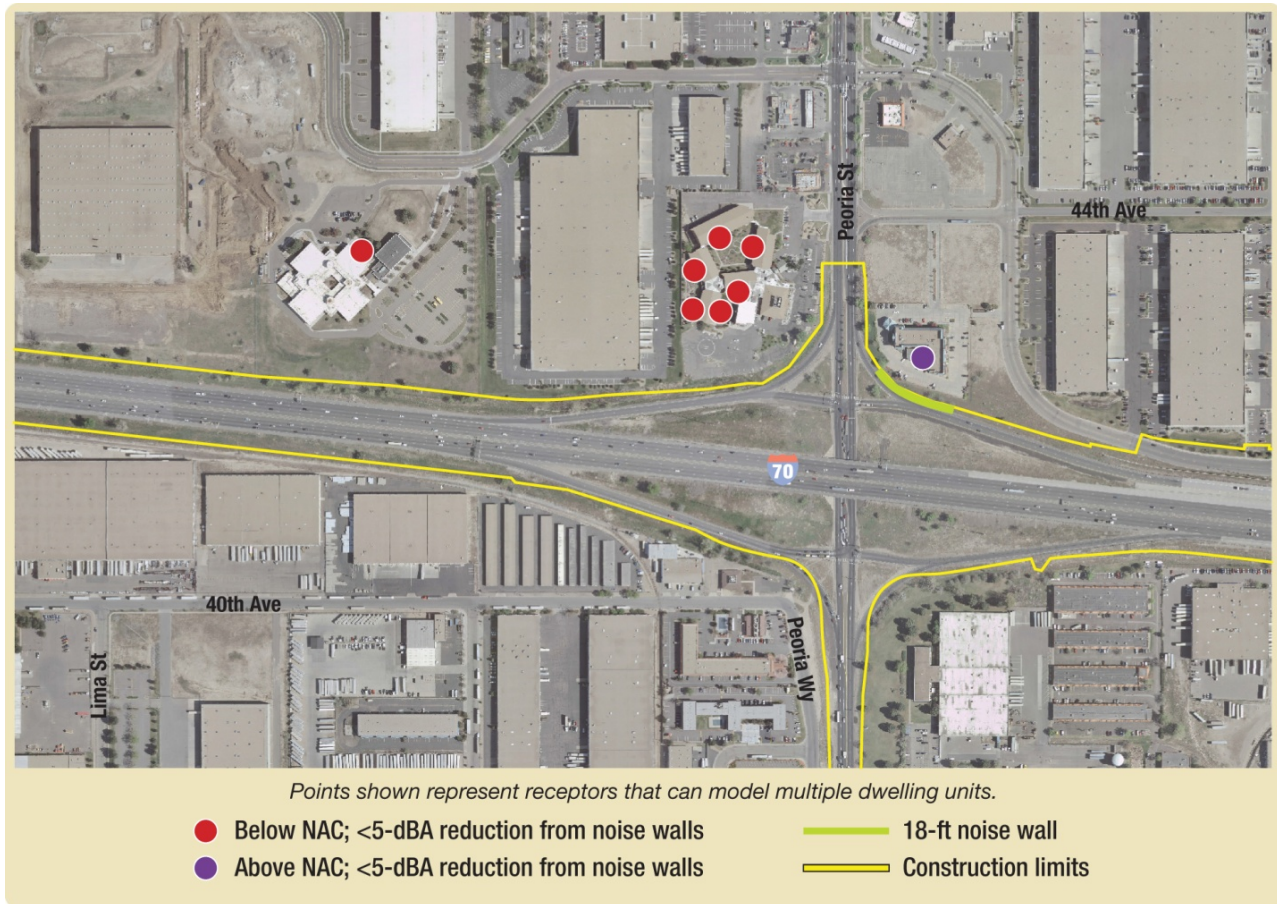
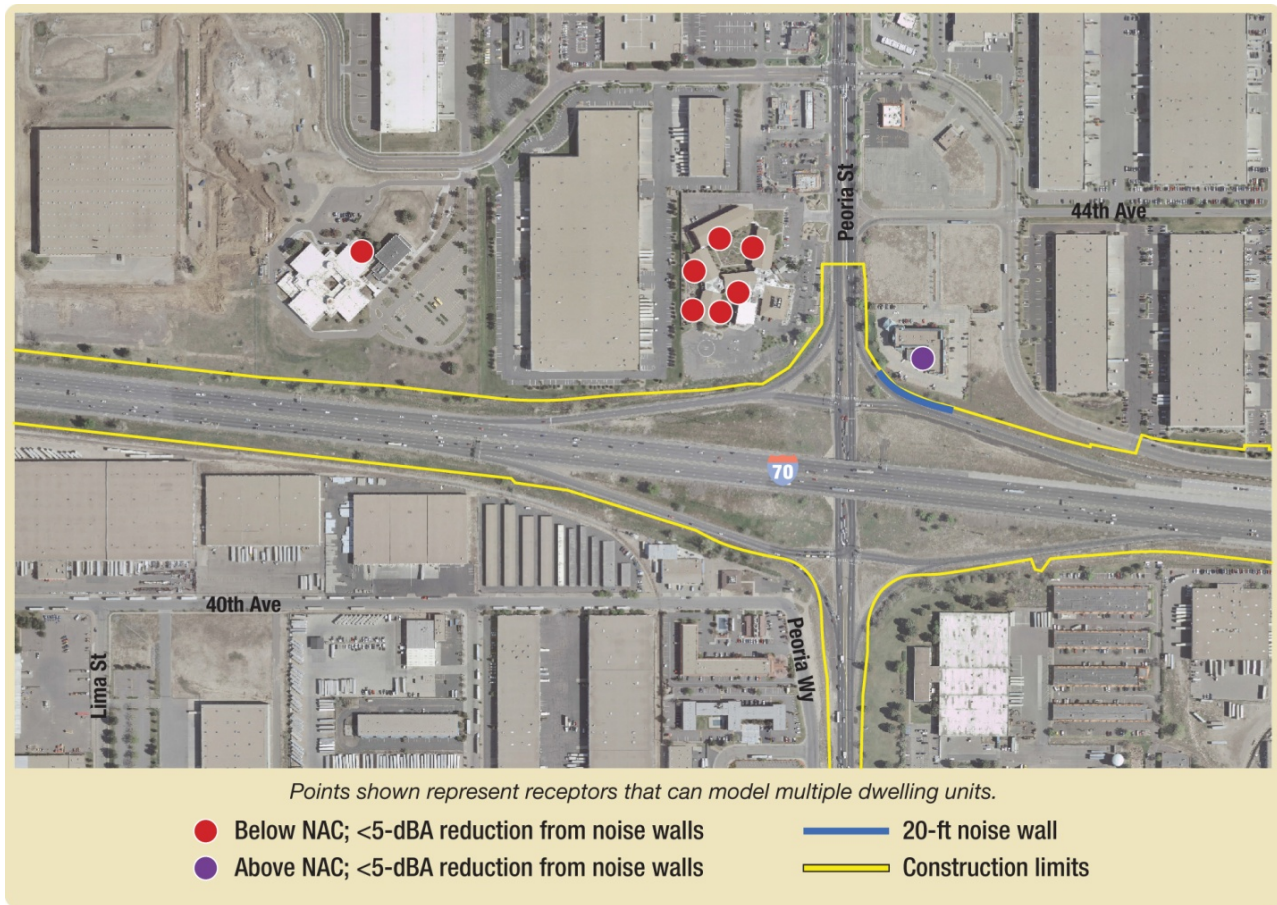


Figure 31. Peoria Street Mitigation Analysis: Build Alternative, Managed Lanes Option



Based on the construction limits of the proposed roadway, the existing noise wall along I-70 that blocks noise to the Montbello Neighborhood would be demolished. Because of this, an analysis was completed to determine how the Build Alternatives would affect noise if the existing noise wall were removed. Figure 32 shows that 43 (17 modeled receptors) of the 112 dwelling units would exceed the NAC threshold under the General-Purpose Lanes Option, but none of the 43 impacted dwelling units would experience a substantial noise increase. Noise levels would range from 61.4 dBA to 70.5 dBA, which is 4.1 dBA to 6.6 dBA greater than existing noise levels.

Figure 32. Montbello Noise Impacts: Build Alternative, General-Purpose Lanes Option



Under the Managed Lanes Option, 52 (21 modeled receptors) of the 112 dwelling units would exceed the NAC threshold, and none of the 52 impacted dwelling units would experience a substantial noise increase. The noise level range would be slightly less under this option, ranging from 60.0 dBA to 70.3 dBA, which is 2.7 dBA to 6.4 dBA greater than existing noise levels (see Figure 33).

Figure 33. Montbello Noise Impacts: Build Alternative, Managed Lanes Option



For both the General-Purpose Lanes and Managed Lanes Options, a 3,200-foot-long wall was modeled for the Montbello area. The wall was found to be feasible at 20 feet in height, but was not found to be reasonable as it exceeded the \$6,800 cost-benefit index in both options. However, because the existing noise wall along I-70 would be demolished during construction of the Build Alternative, a new wall has to be constructed to maintain a noise wall for the impacted dwelling units, per CDOT noise guidelines. Since a 20-foot wall maximized the cost-benefit index in both options, this is the height of the wall that will be recommended to replace the existing noise wall.

Table 15 summarizes mitigation measures for the Montbello Neighborhood impacts. Figure 34 and Figure 35 show the location of the wall modeled in TNM to obtain the design goal and the optimal cost-benefit index. They also show how much the dwelling units would benefit from the wall. Although the cost-benefit index is above CDOT's threshold, the wall would replace an existing wall and is within a reasonable cost of CDOT's threshold.

Table 15. Montbello Noise Impacts and Mitigation Summary

Montbello Results	Existing	No-Action Alternative	Build Alternatives	
			General Purpose Lanes Option	Managed Lanes Option
Noise Impacts				
Number of Dwelling Units	112	112	112	112
Number of Relative Impacts (≥NAC)	0	0	43	52
Number of Substantial Impacts (≥10 dBA)	0	0	0	0
Leq(h) (dBA) Min	57.3	58.7	61.4	60.0
Leq(h) (dBA) Max	63.9	65.4	70.5	70.3
Mitigation Criteria				
Number of Receivers with ≥7-dBA reduction	N/A	N/A	22	22
Number of Receivers with ≥5-dBA reduction			56	56
Optimal Proposed Wall Height (feet)			20	20
Length of Wall (feet)			3,200	3,200
Cost of Wall			\$2,879,980	\$2,879,980
dBA Benefit of Receivers with ≥5-dBA reduction			385	384
Cost-Benefit Index			\$7,480	\$7,500
Is the Wall Feasible?	N/A	N/A	Yes	Yes
Is the Wall Reasonable?			No	No
Is the Wall Recommended for Advancement?			Yes*	Yes*

*Per CDOT regulations, these noise walls must be built as replacements for the removal of existing noise walls.

Figure 34. Montbello Mitigation Analysis: Build Alternative, General-Purpose Lanes Option



Figure 35. Montbello Mitigation Analysis: Build Alternative, Managed Lanes Option



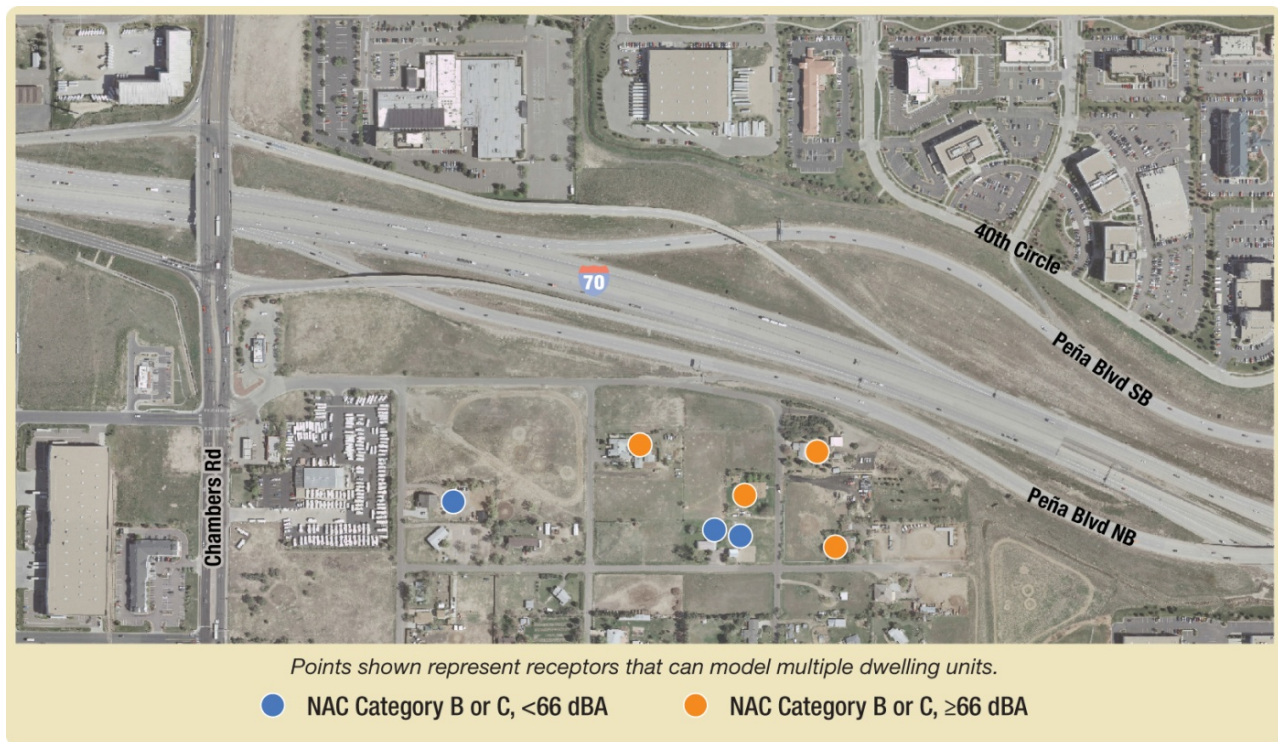
6.3.5. Aurora Neighborhood

East of Chambers Road and south of I-70, there is a large-lot residential neighborhood within the study limits. There are seven homes within the study limits in this neighborhood that were analyzed to determine the noise impacts of the surrounding roadways. Currently, there is no noise mitigation in place between the existing road and the homes.

Existing

The existing impacts for the NAC B dwelling units in this neighborhood extend approximately 450 feet from the edge of the highway. Because there are no noise walls along this segment of I-70, the dwelling units closest to the interstate experience noise levels ranging from 61.2 dBA to as loud as 69.9 dBA. The representative points modeled in TNM are summarized in Figure 36.

Figure 36. Aurora Noise Impacts: Existing Conditions and No-Action Alternative



No-Action Alternative, North and South Options

For the 2035 No-Action Alternative, there will be no changes to the lane configuration on I-70 adjacent to the Aurora Neighborhood. Due to surrounding area growth, significantly higher volumes on the highway are anticipated. The TNM model was run using the same lane configuration and receptors as the existing model, but with the projected 2035 volumes. Based on the increase in traffic in 2035, the noise levels are anticipated to increase to a range from 62.3 dBA to 70.4 dBA, which is an increase of 0.5 dBA to 1.1 dBA over existing noise levels in the neighborhood. The dwelling units impacted under the No-Action Alternative are the same as the existing impacts shown in Figure 36.

Build Alternatives

All of the Build Alternative Options (General-Purpose Lanes Option and Managed Lanes Option) east of Quebec Street have the same roadway footprint in this area. Two additional through-lanes of travel are proposed on I-70 for both Build Alternatives in this area. The peak-hour volumes vary slightly, but to simulate worst-case noise levels, the highest levels for the alternatives were analyzed.

The noise levels for the dwelling units range from 62.6 dBA to 70.4 dBA with the General-Purpose Lanes Option, which is 0.5 dBA to 1.4 dBA higher than existing conditions. Three of the seven dwelling units would exceed their respective NAC thresholds, but none would experience a substantial noise increase. The results of the Build Alternative, General-Purpose Lanes Option noise levels for the Aurora homes are shown in Figure 37

The noise levels for the dwelling units increase slightly, to a range of 62.6 dBA to 71.4 dBA with the Managed Lanes Option, which is 1.4 dBA to 1.5 dBA higher than existing conditions. Four of the dwelling units would exceed their respective NAC thresholds, but none would experience a substantial noise increase. The results of the Build Alternative, Managed Lanes Option noise levels for the Aurora homes are shown in Figure 38.

Figure 37. Aurora Noise Impacts: Build Alternative, General-Purpose Lanes Option

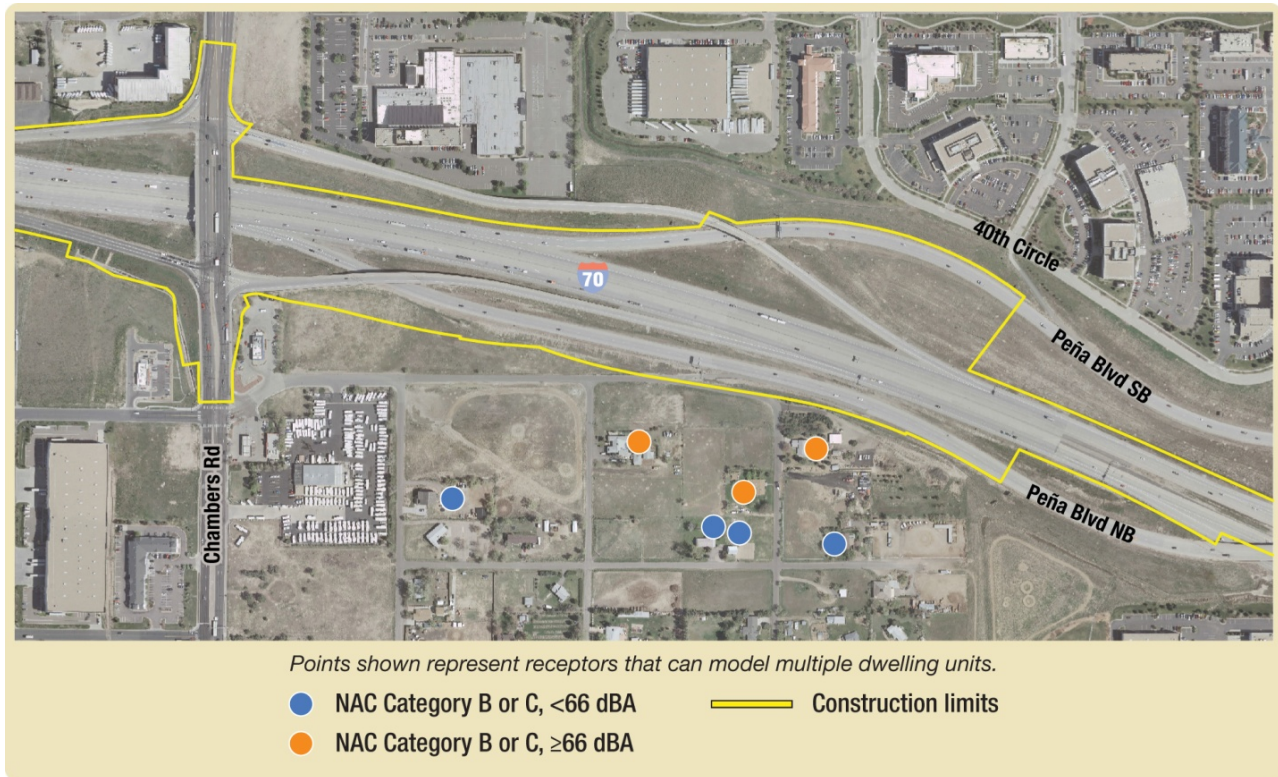
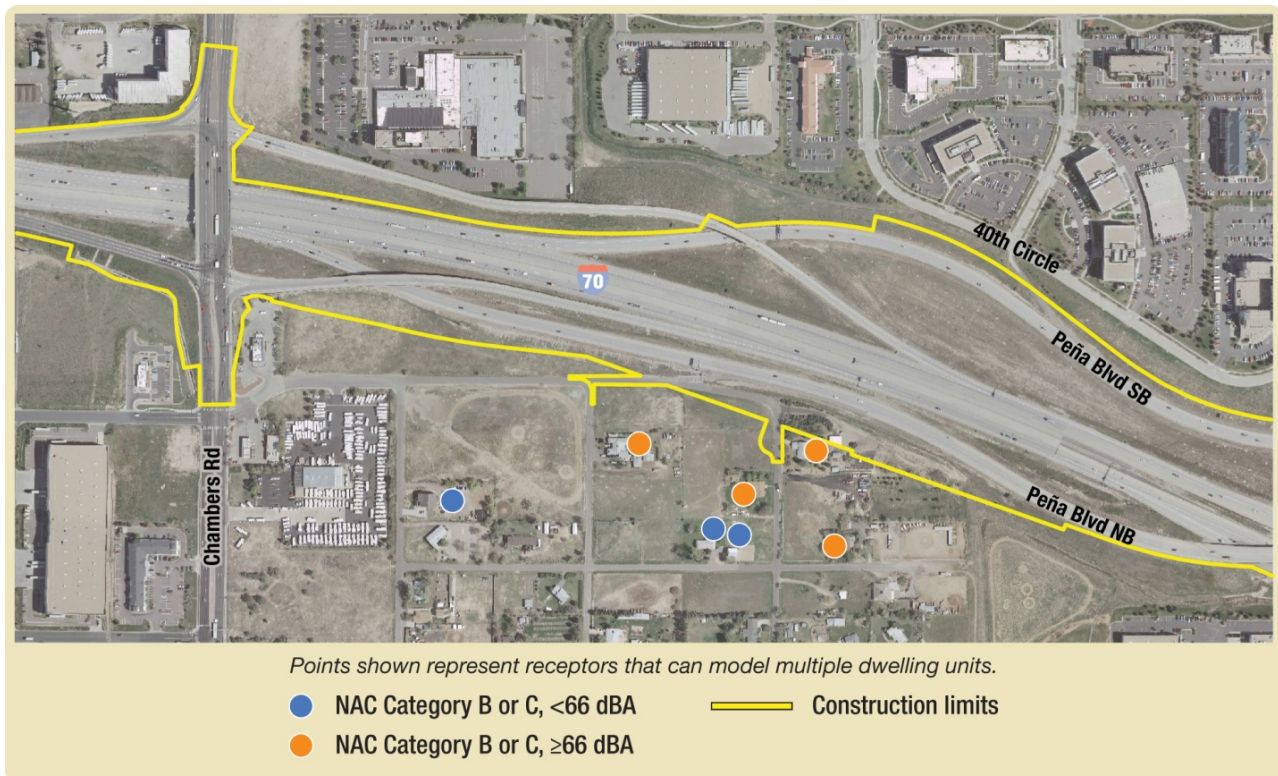


Figure 38. Aurora Noise Impacts: Build Alternative, Managed Lanes Option



For the Build Alternatives, an 1,800-foot-long noise wall along the Peña Boulevard off ramp and mainline of I-70 for the single-family homes south of I-70 in Aurora was evaluated for heights ranging from 8 feet to 20 feet and compared to noise levels without the noise wall in place. The noise walls shown are based upon preliminary design and are subject to change.

For the General-Purpose Lanes Option, an 18-foot noise wall was determined to be feasible, and achieves the 7-dBA design reduction goal. The noise wall would provide a benefit of at least 5 dBA to only three residences at a cost-benefit index of nearly \$75,000 per dBA reduction per benefitted dwelling unit. From this initial review, noise mitigation is not reasonable for providing mitigation to a small number of dwelling units. Figure 39 shows the location of the wall modeled in TNM for the General Purpose Lanes Option in Aurora to obtain the design goal and the optimal cost-benefit index. The figure also shows how much the dwelling units would benefit from the modeled wall.

For the Managed Lanes Option, a 20-foot wall was determined to be feasible and achieves the 7-dBA design reduction goal. The noise wall would provide a benefit of at least 5 dBA to only two residences at a cost-benefit index of nearly \$125,000 per dBA reduction per benefitted dwelling unit. From this initial review, noise mitigation is not reasonable for providing mitigation to a small number of dwelling units. Figure 40 shows the location of the wall modeled in TNM for the Managed Lanes Option in Aurora to obtain the design goal and the optimal cost-benefit index. The figure also shows how much the dwelling units would benefit from the modeled wall.

Based on this information, noise mitigation does appear to be feasible, but is not reasonable the cost is much greater than CDOT's desired cost-benefit index. Table 16 summarizes the impacts and mitigation measures for the Aurora Neighborhood.

Table 16. Aurora Noise Impacts and Mitigation Summary

	Existing	No-Action Alternative	Build Alternatives	
			General-Purpose Lanes Option	Managed Lanes Option
Noise Impacts				
Number of Dwelling Units	7	7	7	7
Number of Relative Impacts (≥NAC)	4	4	3	4
Number of Substantial Impacts (≥10 dBA)	0	0	0	0
Leq(h) (dBA) Min	61.2	62.3	62.6	62.6
Leq(h) (dBA) Max	69.9	70.4	70.4	71.4
Mitigation Criteria				
Number of Receivers with ≥7-dBA reduction	N/A	N/A	1	1
Number of Receivers with ≥5-dBA reduction			3	2
Optimal Proposed Wall Height (feet)			18	20
Length of Wall (feet)			1,800	1,800
Cost of Wall			\$1,455,570	\$1,617,300
dBA Benefit of Receivers with ≥5-dBA reduction			20	13
Cost-Benefit Index			\$73,890	\$121,600
Is the Wall Feasible?	N/A	N/A	Yes	Yes
Is the Wall Reasonable?			No	No
Is the Wall Recommended for Advancement?			No	No

Figure 39. Aurora Mitigation Analysis: Build Alternative, General-Purpose Lanes Option

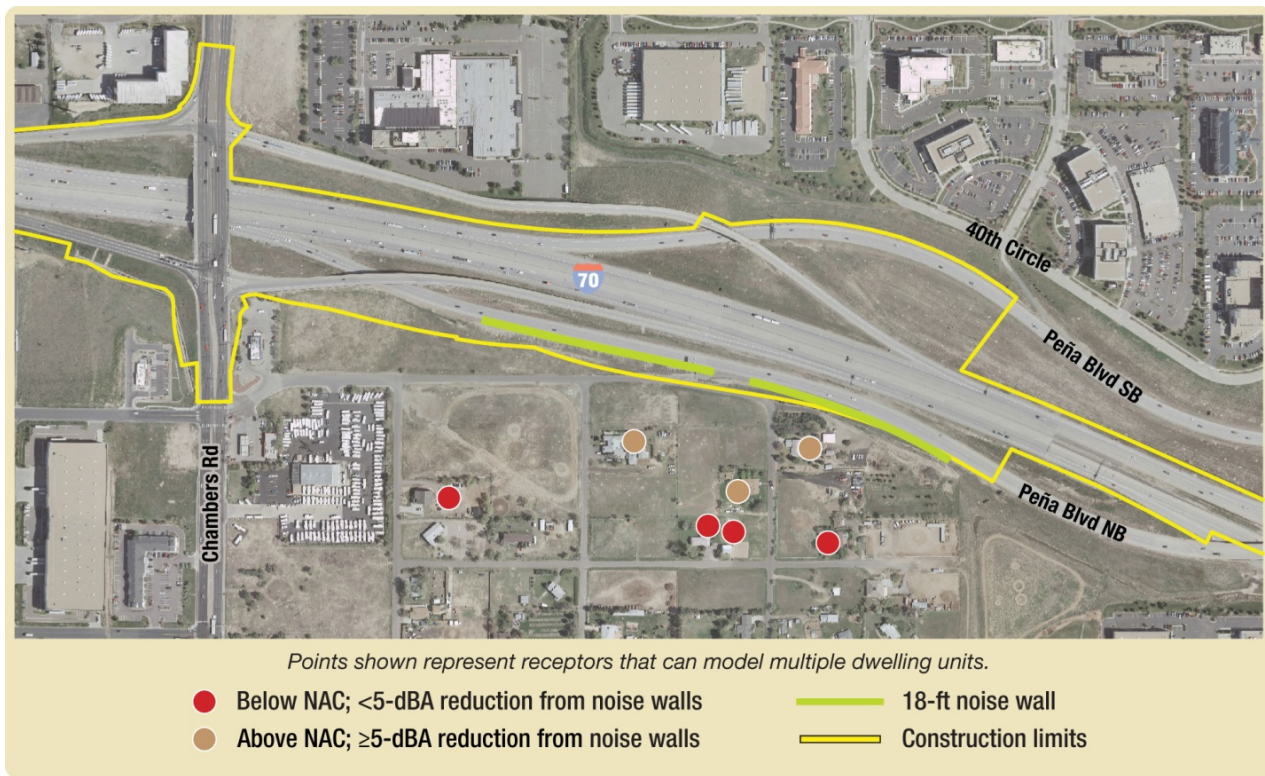
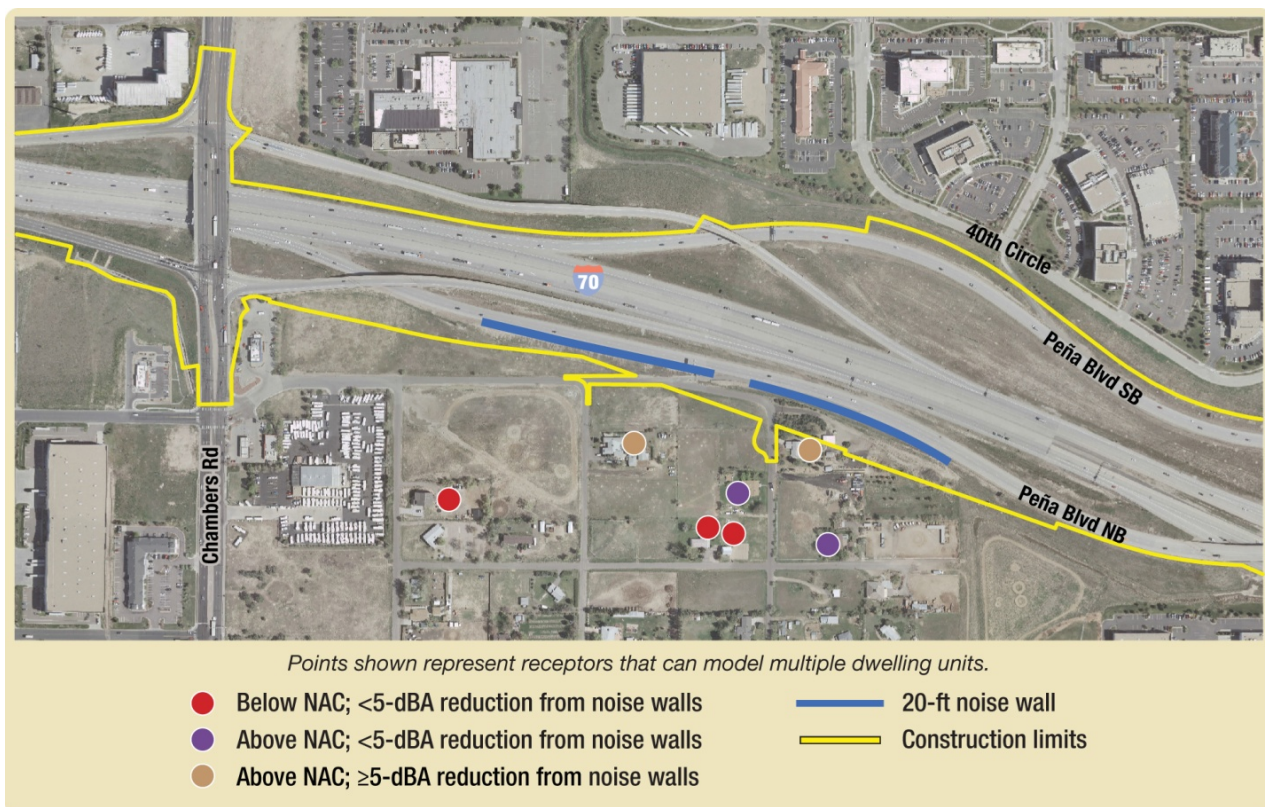


Figure 40. Aurora Mitigation Analysis: Build Alternative, Managed Lanes Option



6.3.6. Mitigation Summary

Noise walls were considered for NAC B and NAC C dwelling units within the study limits if the 2035 noise levels exceeded their respective NAC thresholds or if the 2035 noise levels were 10 dBA higher than existing noise levels. In several neighborhoods, installation of a noise wall will meet the feasibility requirement, as well as the design goal and cost-benefit ratio reasonableness criteria established by CDOT for a noise wall.

The remaining reasonableness criterion necessary before noise abatement can be built is a survey of the owners and residents who benefit from a 5-dBA or greater reduction from the recommended abatement measures. This survey, called the Benefitted Receptor Noise Survey, will be conducted prior to the ROD.

As part of this Supplemental Draft EIS, wall tapers and different wall heights on one continuous wall length were not analyzed, with the exception of the Partial Cover Lowered Alternative. This more in-depth analysis will be conducted for all sections where walls are considered feasible and reasonable in the Final EIS. Additionally, a final abatement determination will be made about wall design for the Final EIS.

Table 17 summarizes the analysis of the noise walls for each neighborhood, including the optimal wall height and the cost-benefit index, based on the analysis performed.

Table 17. Noise Wall Mitigation Summary by Neighborhood

Alternative	Option	Optimal Proposed Wall Height (feet)	Length of Wall (feet)	Cost of Wall	dBA Benefit of Receivers with ≥5-dBA reduction	Cost Benefit Index	Is the Wall Feasible?	Is the Wall Reasonable?	Is the Wall Recommended for Advancement?
Globeville North of I-70									
Build Alternatives	General-Purpose Lanes Option	12	3,370	\$1,817,320	0	\$0	No	No	No
	Managed Lanes Option	12	3,370	\$1,817,320	0	\$0	No	No	No
Globeville South of I-70									
Build Alternatives	General-Purpose Lanes Option	20	2,540	\$2,285,150	66	\$34,890	Yes	No	No
	Managed Lanes Option	20	2,540	\$2,285,150	94	\$24,230	Yes	No	No
Elyria									
No-Action Alternative	North Option	12	2,660	\$1,436,400	704	\$2,050	Yes	Yes	Yes
	South Option	12	2,550	\$1,377,000	611	\$2,260	Yes	Yes	Yes
Revised Viaduct Alternative	North Option	10	2,570	\$1,156,500	680	\$1,700	Yes	Yes	Yes
	South Option	10	3,050	\$1,372,500	735	\$1,870	Yes	Yes	Yes
Partial Cover Lowered Alternative	Basic Option	18	1,500	\$1,218,240	387	\$3,150	Yes	Yes	Yes
	Modified Option	19	1,530	\$1,306,440	384	\$3,400	Yes	Yes	Yes
Swansea North of I-70									
No-Action Alternative	North Option	12	4,010	\$2,165,400	689	\$3,150	Yes	Yes	Yes
	South Option	12	4,130	\$2,230,200	681	\$3,280	Yes	Yes	Yes
Revised Viaduct Alternative	North Option	10	3,520	\$1,584,000	672	\$2,360	Yes	Yes	Yes
	South Option	10	3,790	\$1,705,500	725	\$2,360	Yes	Yes	Yes
Partial Cover Lowered Alternative	Basic Option	19, 20	1,630	\$1,437,700	309	\$4,650	Yes	Yes	Yes
	Modified Option	11	1,150	\$566,280	44	\$12,930	No	No	No

Alternative	Option	Optimal Proposed Wall Height (feet)	Length of Wall (feet)	Cost of Wall	dBA Benefit of Receivers with ≥5-dBA reduction	Cost Benefit Index	Is the Wall Feasible?	Is the Wall Reasonable?	Is the Wall Recommended for Advancement?
Swansea South of I-70									
No-Action Alternative	North Option	12	5,010	\$2,705,400	961	\$2,820	Yes	Yes	Yes
	South Option	12	5,280	\$2,851,200	720	\$3,960	Yes	Yes	Yes
Revised Viaduct Alternative	North Option	12	4,250	\$2,295,000	634	\$3,630	Yes	Yes	Yes
	South Option	12	4,320	\$2,332,800	550	\$4,240	Yes	Yes	Yes
Partial Cover Lowered Alternative	Basic Option	16, 18, 19	1,920	\$1,519,900	138	\$11,010	Yes	No	No
	Modified Option	8	3,480	\$1,252,080	0	\$0	No	No	No
Peoria									
Build Alternatives	General-Purpose Lanes Option	18	270	\$215,460	8	\$27,980	No	No	No
	Managed Lanes Option	20	270	\$239,400	7	\$34,200	No	No	No
Montbello									
Build Alternatives	General-Purpose Lanes Option	20	3,200	\$2,879,980	385	\$7,480	Yes	No	Yes*
	Managed Lanes Option	20	3,200	\$2,879,980	384	\$7,500	Yes	No	Yes*
Aurora									
Build Alternatives	General-Purpose Lanes Option	18	1,800	\$1,455,570	20	\$73,890	No	No	No
	Managed Lanes Option	20	1,800	\$1,617,300	13	\$121,600	No	No	No

*Per CDOT regulations, these noise walls must be built as replacements for the removal of existing noise walls.

6.4. Construction Noise

Construction noise will present the potential for short-term impacts to those receptors located along the corridor and along designated construction access routes. It is anticipated that a portion of the construction will occur at night to minimize traffic disruption. Vibrations can occur from general construction equipment use near sensitive receptors, particularly pile driving for substructure elements from compaction equipment. The primary source of construction noise is expected to be diesel-powered equipment, such as trucks and earth moving equipment, and construction activities such as demolition hammers on trackhoes, rubble load outs, and tailgate and bucket bang. Pile driving and demolition are expected to be the loudest construction operations. Piles would be required at most major bridge installations. Bridge and road demolition also would be required at many locations.

This project will abide by the appropriate city codes as they pertain to construction noise. If noise levels during construction are expected to exceed the limits from the city codes, the contractor must obtain the necessary ordinance variance.

According to the Building Division of the Development Services Office, the unincorporated sections of Adams County do not have a noise ordinance pertaining to construction.

6.4.1. Construction Mitigation

Construction noise impacts to local businesses will be presented to the public as part of the public involvement program that will occur after completion of the Final EIS and Record of Decision. Public suggestions will be incorporated into the mitigation plan, where appropriate. Prior to construction, all germane ordinance variations and permissions must be acquired. By contract agreement, each construction contractor will be required to submit a work plan outlining work schedules and intended mitigation measures prior to initiating construction. Construction noise mitigation measures can be found in the FHWA's *Highway Construction Noise Handbook* (2006). Heavy vibration construction activities that occur within approximately 50 feet of existing structures would require special care to prevent structural damage. Details of these provisions would be determined during final design and before construction begins.

In the vicinity of the elementary school in Swansea, construction noise should be mitigated to the maximum extent possible during school hours. If possible, construction should take place during times when school is not in session. If this is not possible, high construction noise activities should take place during non-school hours. Temporary noise shielding also could be used around the school playground and other outdoor areas of frequent use.

The effective control of highway construction noise can be achieved by considering the following:

- Alternative design options
- Mitigation at the source
- Mitigation along the path
- Mitigation at the dwelling unit

The following best management practices (BMPs) will be required by the contractor, as applicable:

- Construct permanent sound barriers prior to roadway construction, where possible from a construction staging standpoint
- Use noise blankets on equipment and quiet-use generators
- Minimize construction duration in residential areas as much as possible
- Minimize night-time activities in residential areas as much as possible

- Reroute truck traffic away from residential streets where possible
- Combine noisy operations to occur in the same time period
- Use alternative construction methods in sensitive areas, such as sonic or vibratory pile driving
- Conduct pile driving and other high-noise activities during day-time construction, where possible

Additional BMPs for consideration include:

- Avoiding areas of work near noise sensitive receptor locations, or minimizing work in these areas where people or the environment is noise sensitive.
- Eliminating slamming of truck beds, truck tailgates, and equipment buckets
- Idling equipment motors when the equipment is not in immediate use
- Minimizing back up distances for trucks and other equipment
- Scheduling trucks appropriately to minimize long queuing lines
- Installing noise shielding when in close proximity to residences

Contractors also will consider maintaining contact with the public through a 24-hour telephone contact line for questions and concerns and by providing schedules of planned construction activities.

For more information on construction noise issues, see FHWA's *Highway Construction Noise Handbook* (2006).

6.5. Local Agency Coordination

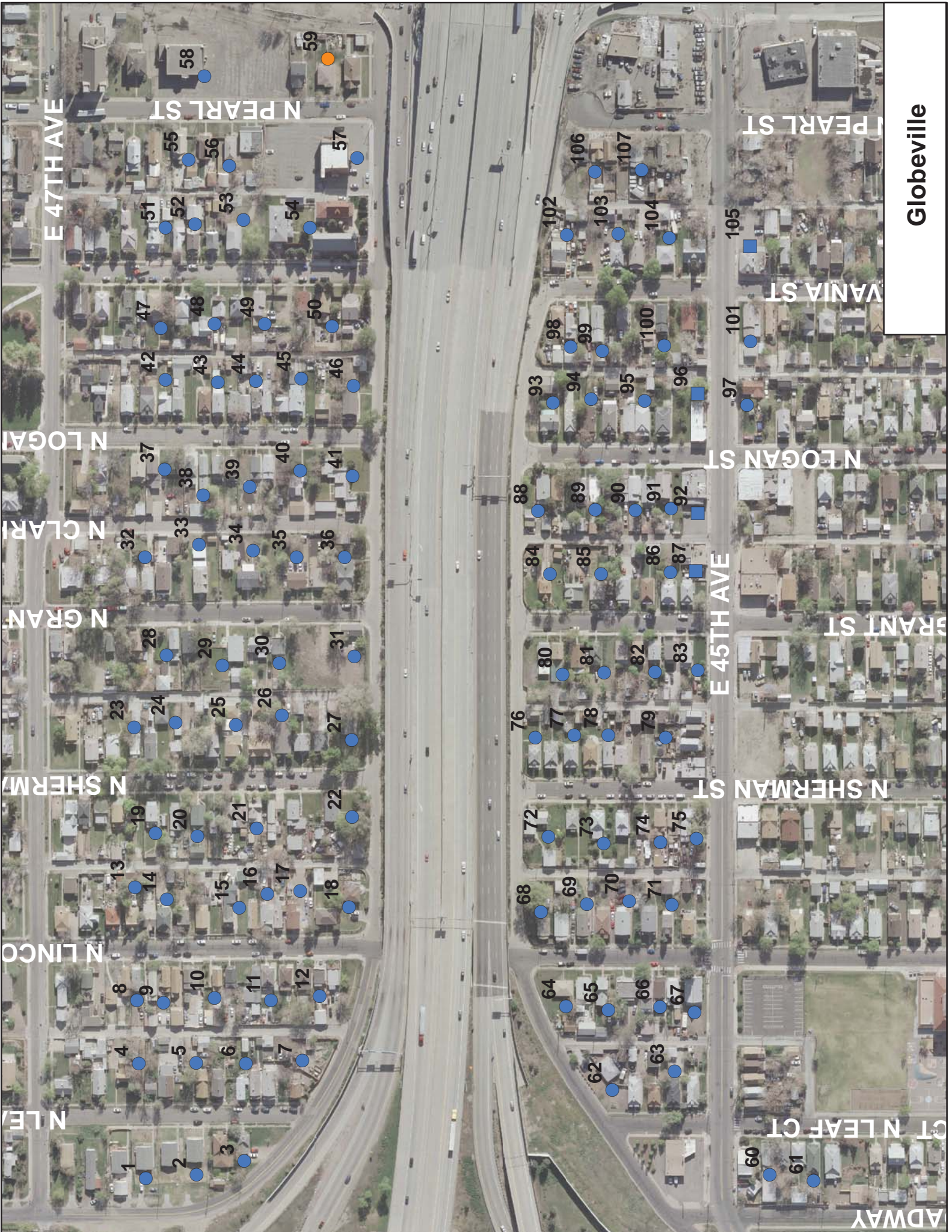
Local government officials can promote compatibility between land development and highways by ensuring that NAC B and NAC C type development is restricted or limited within the projected areas affected by traffic noise. Noise contours will be provided to local officials as a part of the Final EIS after a preferred alternative has been selected. These contours can be used to establish compatible development of currently undeveloped parcels or compatible redevelopment in areas where land use changes. NAC E sites should use this information to situate outdoor use areas associated with office buildings and commercial centers away from the roadway.

7. References

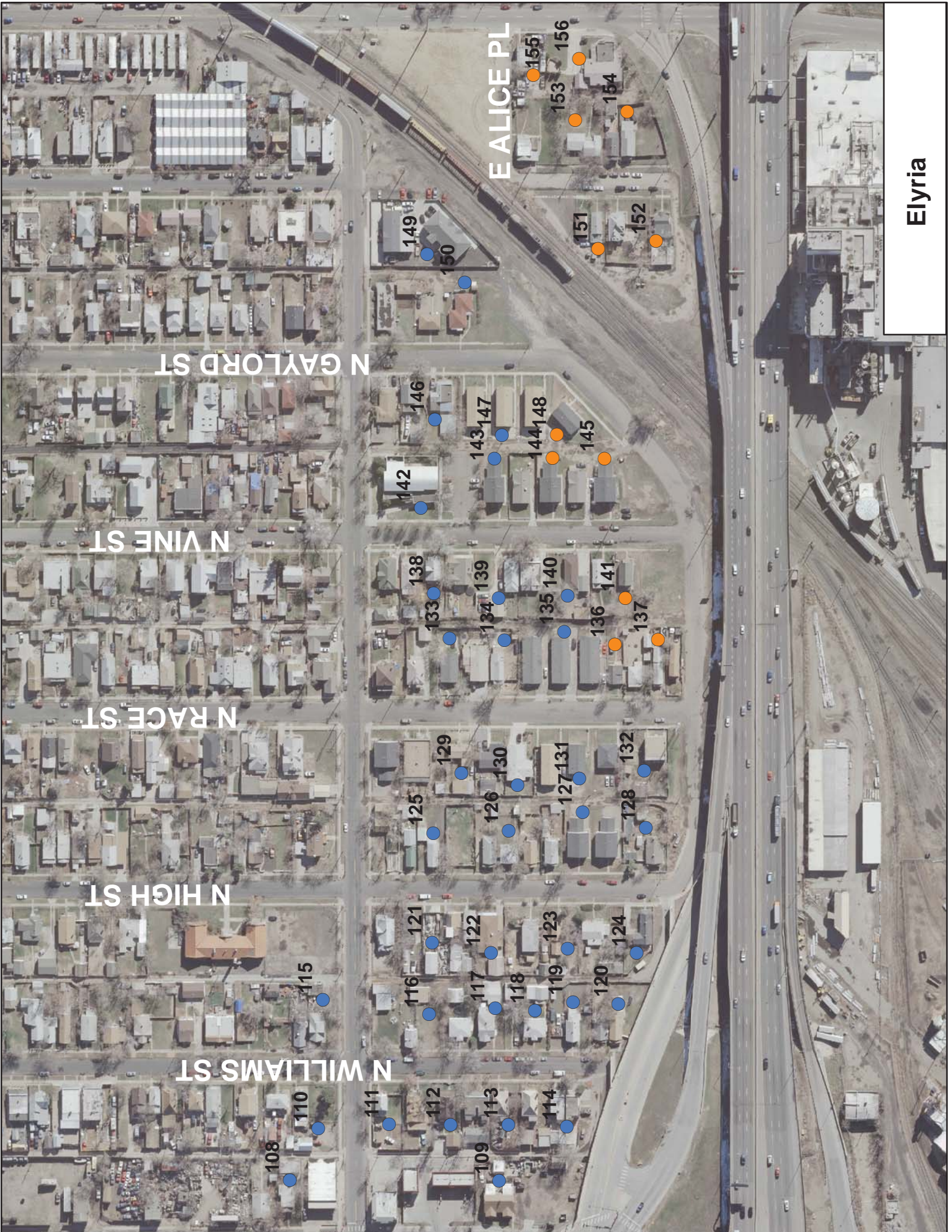
- Colorado Department of Transportation. (2013). *Noise analysis and abatement guidelines*. Denver: Author.
- Council on Environmental Quality. (n.d.). Council on Environmental Quality regulations for implementing National Environmental Policy Act, part 1502: Environmental impact statement. 40 CFR § 1502.14. Washington, D.C.: U.S. Government Printing Office.
- Federal Highway Administration. (1996). *Measurement of highway-related noise*. Washington, D.C.: Author.
- Federal Highway Administration. (Jan. 2011). Procedures for abatement of highway traffic noise and construction noise, 23 CFR § 772.
- Federal Highway Administration. (2011). *Highway traffic noise analysis and abatement policy and guidance*. Washington, D.C.: Author.
- National Environmental Policy Act of 1969, Pub. L. No. 91-190, 83 Stat. 852, 42 USC § 4321-4327.
- Transportation Research Board. (2010). *Highway capacity manual*. Washington, D.C.: National Academy of Sciences.
- U.S. Department of Transportation, Research and Innovative Technology Administration. (2006). *Federal Highway Administration Highway construction noise handbook*. Cambridge, MA: Author.

Attachment K – Appendix A

Data and Monitoring Results



Globeville



Elyria

N GAYLORD ST

N VINE ST

N RACE ST

N HIGH ST

N WILLIAMS ST

E ALICE PL

108

110

111

112

109

113

114

116

121

117

122

118

123

119

120

124

125

129

126

130

127

131

128

132

133

138

134

139

135

140

136

141

137

142

146

143

147

144

148

145

151

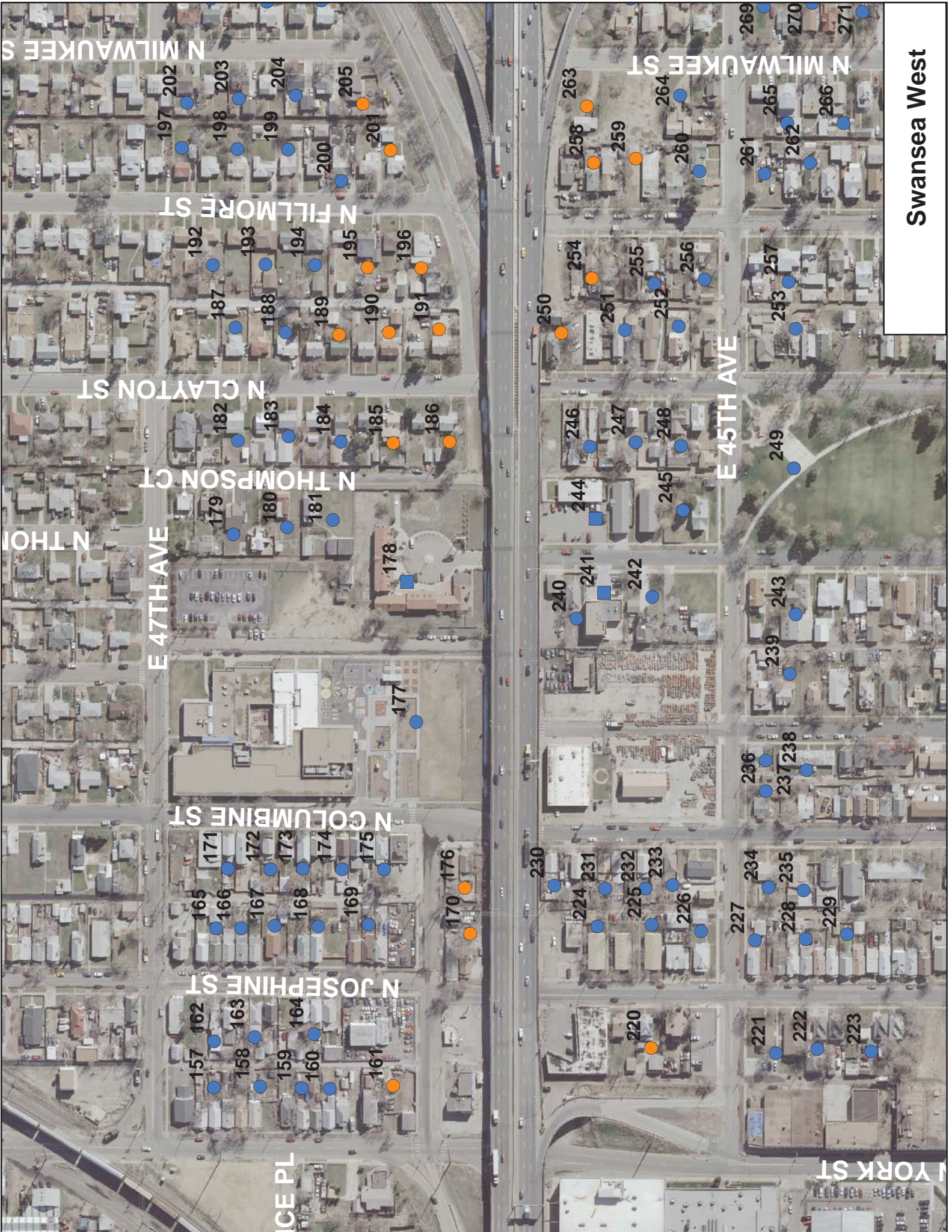
152

153

155

156

154



Swansea West



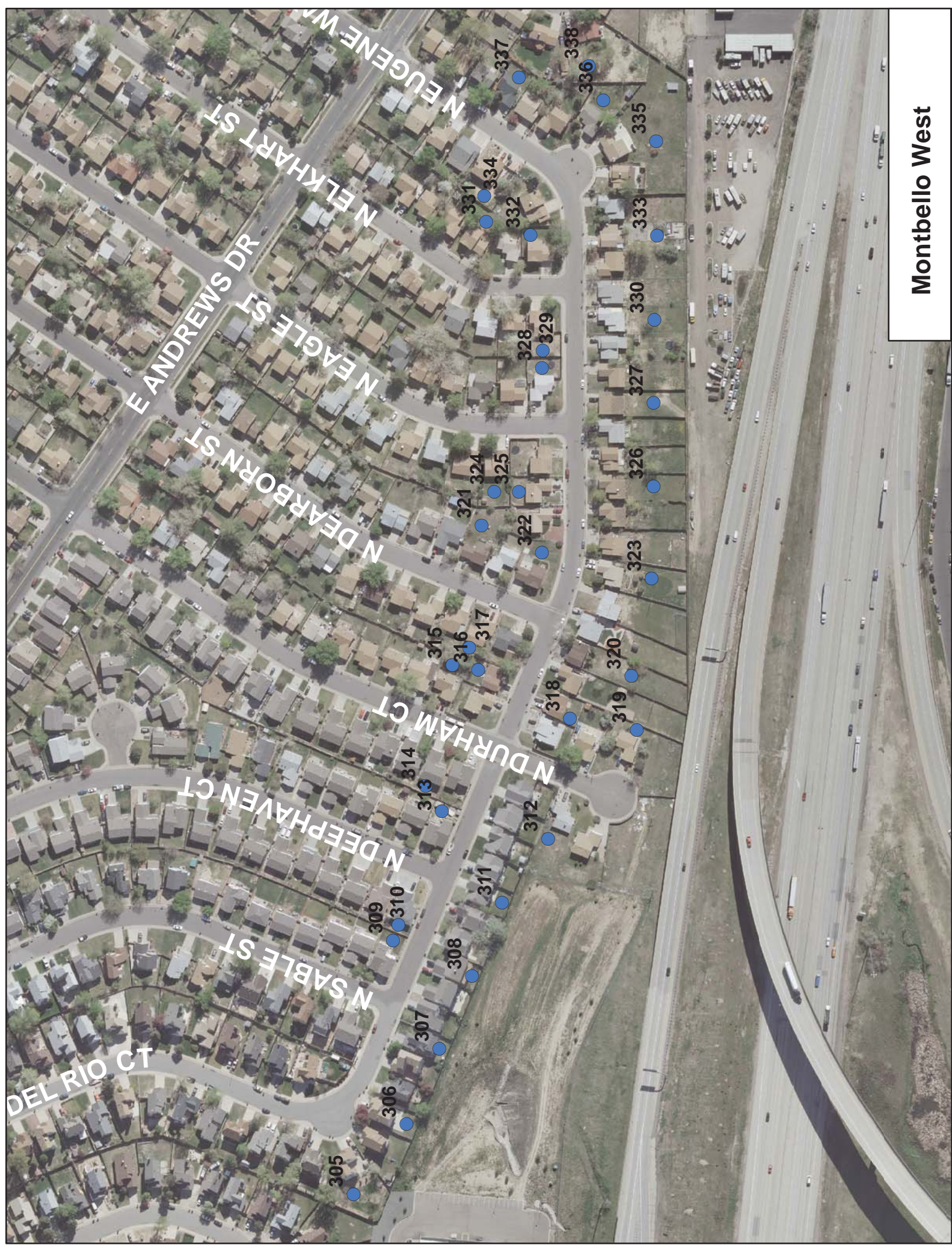
Swansea East



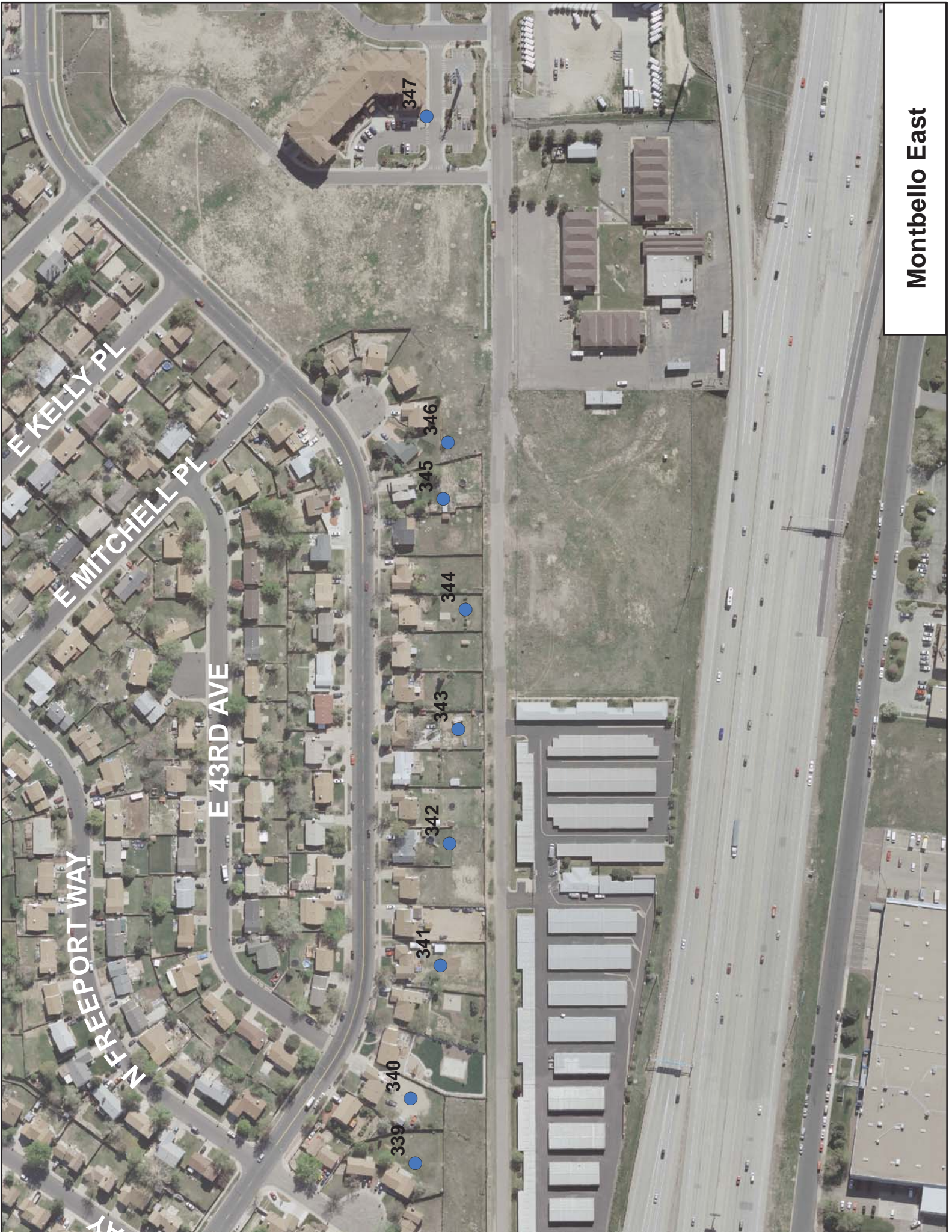
Northfield Stapleton



Peoria



Montbello West



Montbello East



Aurora

Globeville Receivers North of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 No Action	2035 General Purpose	2035 Managed Lanes					
						10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
1	B	2	63.9	65.8	65.8	65.4	64.6	64	63.4	63.1	62.7
2	B	2	63.4	65.4	65.4	64.5	63.6	63	62.5	62.2	61.8
3	B	2	62.5	64.4	64.4	63.2	62.2	61.7	61.4	61	60.6
4	B	3	59.9	62.1	62.1	62	61.3	60.6	60.2	59.9	59.7
5	B	2	60.5	62.8	62.7	62.5	61.2	60.8	60.3	59.9	59.6
6	B	2	61.1	63.6	63.6	63.2	61.9	61.4	61	60.6	60.3
7	B	2	58.8	61.2	61.2	60.7	59.6	59.3	59.1	58.8	58.5
8	B	3	59.8	62	62	61.9	61.2	60.4	60	59.7	59.4
9	B	3	60.1	62.4	62.4	62.4	61.4	60.7	60.3	59.9	59.6
10	B	2	60.6	62.9	62.9	62.9	61.5	61	60.7	60.3	59.9
11	B	3	61	63.7	63.7	63.6	62.3	61.8	61.3	60.9	60.6
12	B	3	60.9	63.7	63.7	63.6	62.4	61.8	61.4	61.1	60.8
13	B	2	58.6	60.9	60.9	61.1	59.8	58.8	58.2	57.9	57.6
14	B	3	58.5	61.1	61	61.3	59.8	58.8	58.3	57.8	57.5
15	B	2	59	62.1	62.2	62.4	60.6	59.9	59.4	58.9	58.5
16	B	3	59.8	62.5	62.9	63.1	61.5	60.8	60.3	59.8	59.4
17	B	1	60	63.3	63.3	63.5	62.4	61.8	61.3	60.8	60.3
18	B	2	60.2	63.1	63.1	63.3	62.8	62.2	61.8	61.3	60.8
19	B	2	59.2	61.6	61.6	61.8	60.2	59.3	58.7	58.3	57.9
20	B	3	59.6	62.3	62.2	62.5	60.8	59.9	59.3	58.9	58.5
21	B	3	60	63.2	63.1	63.4	61.7	61.1	60.5	60	59.5
22	B	2	61.2	65.1	65.1	65.3	64.6	63.9	63.4	62.8	62.4
23	B	1	58.9	60.6	60.7	61	59.4	58.4	57.8	57.4	57.1
24	B	3	60	61.9	61.9	62.3	60.3	59.5	58.9	58.4	58.1
25	B	3	61.1	63.5	63.5	63.9	61.6	60.8	60.3	59.9	59.5
26	B	3	61.8	64.8	64.7	65	62.9	62.2	61.5	61.1	60.6
27	B	2	62	65.8	65.9	66.1	65.2	64.6	64	63.5	63
28	B	2	60.2	62	62	62.4	60.6	59.7	59.1	58.6	58.2
29	B	2	61.6	63.7	63.8	64.1	62	61.2	60.6	60.1	59.7
30	B	2	62.6	65.2	65.3	65.6	63.5	62.7	62	61.4	61
31	B	1	62.5	66.4	66.5	66.7	65.8	65.1	64.4	63.8	63.3
32	B	2	58.5	60.6	60.7	61	59.5	58.5	57.9	57.5	57.2
33	B	2	60.8	62.4	62.5	62.8	61.2	60.2	59.6	59.1	58.8
34	B	1	62.3	64.4	64.5	64.8	63	62.2	61.5	61.1	60.6
35	B	1	63.4	66.2	66.2	66.5	64.6	63.7	62.9	62.4	62
36	B	2	63.6	66.9	67.1	67.3	66.1	65.3	64.6	63.9	63.4
37	B	2	59.7	61.2	61.2	61.5	60.3	59.2	58.7	58.3	57.9
38	B	3	60.8	62.4	62.5	62.8	61.3	60.3	59.8	59.4	59
39	B	2	61.3	63.2	63.3	63.6	62	61.1	60.6	60.2	59.8

Globeville Receivers North of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 No Action	2035 General Purpose	2035 Managed Lanes					
						10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
40	B	2	62.7	65.3	65.4	65.6	64	63.2	62.5	61.9	61.6
41	B	4	63.2	66.4	66.4	66.6	65.7	65	64.3	63.7	63.2
42	B	3	58.6	61.1	61.2	61.4	59.8	59.2	58.8	58.5	58.2
43	B	3	60	62.9	62.9	63.1	61.7	61.2	60.9	60.6	60.4
44	B	3	60.7	63.6	63.7	63.9	62.6	62	61.7	61.4	61.1
45	B	2	61.6	64.4	64.6	64.7	63.6	63	62.5	61.9	61.5
46	B	3	61.5	64.3	64.4	64.6	63.8	63.1	62.5	61.9	61.4
47	B	2	58.7	61.1	61.2	61.4	59.8	59.2	58.7	58.3	58
48	B	2	60.1	62.8	62.8	63	61.4	60.8	60.3	60	59.6
49	B	2	61.2	63.9	64	64.2	63	62.4	61.9	61.6	61.2
50	B	3	62.2	65.3	65.4	65.5	64.1	63.4	62.7	62.2	61.6
51	B	1	60.1	62.7	62.9	63.2	62.5	62.2	62.1	61.9	61.8
52	B	2	60.5	63.3	63.4	63.7	62.9	62.6	62.4	62.3	62.1
53	B	2	62.1	64.6	64.8	65	64.1	63.8	63.6	63.4	63.2
54	C	1	63	65.8	65.9	66.1	65	64.5	64.1	63.5	62.6
55	B	2	60.8	63.5	63.6	63.9	63.2	62.9	62.7	62.6	62.4
56	B	2	61.4	64	64.2	64.4	63.7	63.4	63.2	63	62.8
57	C	1	63.3	66.1	66.2	66.5	65.5	64.1	63.3	62.6	62.1
58	C	1	63.4	66.6	66.9	67.1	66.8	66.7	66.6	66.6	66.5
59	B	3	66.3	69.4	69.6	69.9	69.5	69.3	68.9	68.8	68.6

Globeville Receivers South of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 No Action	2035 General Purpose	2035 Managed Lanes					
						10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
60	B	3	61.6	63.8	64.1	64.2	64.1	64	64	64	63.9
61	B	3	61.5	63.7	63.9	64.1	63.9	63.8	63.8	63.7	63.7
62	B	2	60	62.9	63.2	63.3	62.7	62.2	61.7	61.3	61.1
63	B	3	59.9	62.2	62.6	62.7	62.1	61.7	61.4	61.2	61.2
64	B	2	59.6	62.5	62.9	63	62.3	61.8	61.3	61	60.7
65	B	3	59.9	62.6	62.9	63.1	62.1	61.7	61.2	60.9	60.6
66	B	3	59.9	62.3	62.6	62.8	61.9	61.5	61.1	60.8	60.7
67	C	1	59.8	62.2	62.5	62.7	61.8	61.5	61.2	61	61
68	B	2	59.3	62.4	63.1	63.1	62.4	61.8	61.3	60.9	60.5
69	B	2	59.6	62.4	63.3	63.3	62.1	61.4	60.9	60.5	60.1
70	B	2	59.5	62.1	62.9	63	61.3	60.6	60	59.7	59.3
71	B	2	59	61.4	62.1	62.3	60.6	59.7	59.2	58.8	58.5
72	B	2	59.9	63.5	64.4	64.3	63.4	62.8	62.6	62.1	61.6
73	B	2	60.2	63.1	63.9	64	62.2	61.5	61	60.6	60.2
74	B	3	59.7	62.1	62.9	63	61.3	60.5	60	59.6	59.3
75	B	1	59.3	61.6	62.3	62.4	60.9	60.2	59.6	59.3	59.1
76	B	2	61.2	65.1	66.2	65.9	65	64.4	63.7	63.2	62.6
77	B	2	61.5	64.8	65.9	65.7	63.6	62.9	62.3	61.6	61
78	B	2	61.2	63.8	65	64.8	62.9	61.8	61.1	60.4	59.8
79	B	3	60.9	63.2	64.1	64.2	62.4	61.3	60.5	60	59.6
80	B	3	62	65.5	66.6	66.4	64.3	63.6	63	62.4	61.8
81	B	2	61.6	64.4	65.6	65.5	63.3	62.3	61.6	61	60.4
82	B	3	60.8	63.3	64.3	64.4	62.4	61.3	60.6	59.9	59.5
83	B	1	60.2	62.5	63.2	63.4	62	60.7	60	59.5	59.1
84	B	2	63.9	67.4	68.5	68.1	65.8	64.9	64.1	63.3	62.7
85	B	2	62.7	65.8	66.8	66.6	64.6	62.9	62	61.1	60.4
86	B	3	60.8	63.3	64.3	64.1	63	61	60.2	59.6	59.1
87	E	1	60.3	62.5	63.6	63.4	62.5	60.5	59.8	59.3	58.9
88	B	2	64.5	68.6	69.6	69.1	67.1	66.1	65.2	64.5	63.9
89	B	3	63.1	66.1	67.1	66.9	65	63.3	62.3	61.5	60.8
90	B	3	61.8	64.5	65.5	65.3	64.2	61.9	61	60.3	59.6
91	B	1	60.7	63.1	64.2	63.9	63	60.8	59.9	59.3	58.8
92	E	1	60.1	62.3	63.4	63.2	62.4	60.3	59.5	58.9	58.5
93	B	2	62.8	66	67.2	66.7	65.6	65	64.3	63.7	63.3
94	B	2	62.8	65.8	66.7	66.3	64.5	63.7	62.9	62.2	61.7
95	B	3	62	64.6	65.5	65	63.8	62.7	62.1	61.6	61.1
96	E	1	61.3	63.7	64.5	64.2	63.3	62.2	61.7	61.3	61.1
97	B	1	61	63.3	64.1	63.9	63.4	62.4	62	61.7	61.6
98	B	3	63.2	65.9	66.8	66.5	65	64.1	63.4	62.7	62.2

Globeville Receivers South of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 No Action	2035 General Purpose	2035 Managed Lanes					
						10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
99	B	2	62.9	65.7	66.6	66.1	64.5	63.4	62.6	61.8	61.2
100	B	2	61.6	64.2	65.1	64.7	63.4	62.4	61.7	61.2	60.8
101	B	1	60.3	62.5	63.3	63	62.2	61.1	60.6	60.2	60
102	B	1	64.3	66.2	66.8	66.5	65.5	64.7	64	63.5	63
103	B	2	63.8	66.7	67.4	67.1	66	65.2	64.4	63.6	63.1
104	B	3	63	65.9	66.5	66.3	65.4	64.9	64.5	64.1	63.7
105	E	1	62.3	65	65.5	65.5	65	64.5	64.3	64.1	64
106	B	3	63.7	66.1	66.6	66.4	65.2	64.3	63.5	62.8	62.2
107	B	3	62.9	65.8	66.4	66.3	65.3	64.7	64.1	63.7	63.3

Elyria-Swansea Receivers North of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 No Action North					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
108	B	2	62.9	66.7	65.3	65.2	65.1	65.1	65
109	B	2	64.9	69.2	67.3	67.2	67.2	67.1	67.1
110	B	2	60.8	65.1	62.4	62	61.9	61.8	61.8
111	B	1	61	65.5	63.1	62.8	62.7	62.7	62.6
112	B	2	61.7	66.3	63.5	63.3	63.2	63.1	63.1
113	B	3	62.3	67.4	64.3	64.1	64	63.9	63.9
114	B	2	60	65	62.5	62.4	62.3	62.2	62.1
115	B	2	59.1	64.2	59.9	59.3	59	58.8	58.7
116	B	2	59.7	65.5	61	60.5	60.3	60.1	60
117	B	2	60	66.6	61.9	61.4	61.2	61	60.9
118	B	2	60.1	67.4	62.6	62.2	62	61.8	61.7
119	B	1	60.1	68.4	63.7	63.5	63.3	63.2	63.1
120	B	2	59.7	68.2	64.6	64.6	64.5	64.4	64.3
121	B	2	58.9	65	60.1	59.6	59.3	59.1	58.9
122	B	3	59.8	66.5	61.6	61.1	60.9	60.7	60.6
123	B	2	59.8	68	63.6	63.3	63.2	63	62.9
124	B	2	59.6	68.7	66.7	66.7	66.6	66.6	66.5
125	B	2	60	65.9	59.4	58.7	58.1	57.8	57.5
126	B	4	60.9	67.5	61	60.4	60	59.7	59.5
127	B	4	61.7	68	62.5	62.2	61.9	61.8	61.6
128	B	2	62.5	68.2	65.8	65.7	65.6	65.5	65.5
129	B	4	60.2	66.3	59.8	59	58.5	58.2	58
130	B	2	61.1	67.6	61	60.4	60	59.7	59.5
131	B	3	61.4	67.7	61.9	61.6	61.3	61.1	60.9
132	B	4	63.7	67.7	63.3	63.1	62.9	62.8	62.7
133	B	2	62.4	66	58.5	57.6	56.9	56.5	56
134	B	2	63.7	66.9	59.2	58.3	57.7	57.3	56.9
135	B	4	65.5	67.1	60	59.3	58.8	58.4	58
136	B	3	66.8	67.8	60.7	60.2	59.7	59.3	59
137	B	3	67.7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
138	B	2	62.2	65.5	58.2	57.3	56.7	56.1	55.7
139	B	3	63.8	66.6	59	58.1	57.5	57.1	56.7
140	B	3	65.9	66.9	59.9	59.2	58.7	58.3	57.9
141	B	2	67.5	66.9	60.3	59.8	59.4	59.1	58.8
142	C	1	63.1	65.5	58.3	57.2	56.5	56	55.5
143	B	1	65.1	66	58.7	57.6	56.7	56.2	55.8
144	B	2	66.7	66	59	58.1	57.5	57	56.5
145	B	2	67.6	65	59	58.5	58	57.6	57.2
146	B	2	63.3	64.9	58.2	57.3	56.6	56	55.6

Elyria-Swansea Receivers North of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 No Action North					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
147	B	4	65.4	66.2	58.9	57.7	57	56.5	56
148	B	4	66.2	65.5	59	58	57.5	57	56.5
149	B	3	64	65.6	59.5	58.3	57.7	57.2	56.8
150	B	3	65.1	66.1	59.7	58.7	58	57.4	57
151	B	2	68.9	66.9	59.4	58.6	58.1	57.6	57.2
152	B	2	71.2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
153	B	3	68	70	64.7	64	63.7	63.5	63.3
154	B	2	70.2	71.6	64	63.6	63.3	63.1	62.9
155	B	1	66.9	70.3	67.5	67.3	67.1	67.1	67
156	B	1	68.3	71.8	69.2	69	68.9	68.8	68.8
157	B	3	62.1	66.5	62.3	61.5	61.5	61.4	61.2
158	B	2	62.8	67.5	62.7	62.1	62.1	62	61.8
159	B	2	63.7	68.4	63.4	62.8	62.8	62.6	62.4
160	B	3	64.4	69.1	63.8	63.2	63.2	63	62.9
161	B	1	66.7	71	66.9	66.5	66.5	66.3	66.2
162	B	3	61.9	66.4	61.5	60.7	60.7	60.6	60.4
163	B	3	62.6	67.3	62.2	61.6	61.6	61.4	61.2
164	B	3	63.5	68.2	63	62.4	62.4	62.2	62
165	B	2	59.7	65.9	61.8	61.3	61.3	61.2	61
166	B	3	60	66.3	62	61.4	61.4	61.3	61.2
167	B	1	60.7	67.3	62.2	61.7	61.7	61.5	61.4
168	B	2	62.4	68.8	63	62.4	62.4	62.2	62
169	B	3	63.6	69.4	63.3	62.9	62.6	62.4	62.2
170	B	2	67.7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
171	B	2	59.4	65.8	59.9	58.4	58.4	58	57.6
172	B	2	59.9	66.3	59.2	58	58	57.6	57.3
173	B	3	61	67.6	60	58.8	58.8	58.4	58.1
174	B	3	62.5	68.9	61.2	60	60	59.7	59.4
175	B	3	63	69.4	62	61.1	61.1	60.8	60.5
176	B	2	66.6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
177	C	1	64.1	69.2	61.4	60.2	60.2	59.8	59.4
178	E	1	65.3	68.8	61.2	59.9	59.9	59.4	59
179	B	2	61.2	66.4	58.3	55.8	55.8	55.1	54.5
180	B	2	62.8	67.8	59.5	57	57	56.2	55.6
181	B	1	64.4	68.9	60.8	59.3	58.4	57.8	57.2
182	B	2	61.9	66	58.3	55.8	55.8	55.1	54.5
183	B	2	63.5	67.2	59.5	57	57	56.3	55.7
184	B	2	65.4	68.6	60.9	59.2	58.3	57.6	57.1
185	B	2	67.6	68	60.9	59.3	59.3	58.8	58.4
186	B	2	69.3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
187	B	2	63.1	65.8	59.2	57.2	57.2	56.9	56.5
188	B	2	64.8	66.5	59.4	57.8	56.9	56.4	56

Elyria-Swansea Receivers North of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 No Action North					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
189	B	2	66.8	67.8	61.1	59.1	58.4	57.9	57.4
190	B	2	69.1	68.4	61.6	60	60	59.5	59.1
191	B	2	71.4	68.3	62.7	61.8	61.8	61.5	61.2
192	B	1	62.7	64.7	57.8	55.7	55.7	55.2	54.8
193	B	2	63.9	65.8	58.8	56.5	56.5	56	55.6
194	B	2	65.8	67.2	60.3	58.4	57.6	57.1	56.8
195	B	2	68.2	68.5	61.7	59.4	59.4	58.9	58.6
196	B	2	70.8	69	62.1	61	61	60.7	60.5
197	B	2	61.5	64.2	58.3	57	57	56.8	56.6
198	B	2	62.9	65.2	59.3	58	58	57.8	57.7
199	B	2	64.6	66.3	60.9	59.9	59.6	59.4	59.3
200	B	2	65.7	67.3	62.1	61.1	61.1	61	60.8
201	B	2	68.9	68.8	64	63.5	63.5	63.4	63.3
202	B	2	61.5	64.1	58.3	56.9	56.9	56.7	56.6
203	B	2	63	65.2	59.3	57.9	57.9	57.7	57.5
204	B	2	64.7	66.3	60.8	59.7	59.4	59.2	59.1
205	B	2	67.7	68.3	63.8	63.2	63.2	63.1	63
206	B	2	59.4	61.6	59.3	58.6	58.6	58.5	58.4
207	B	2	62.6	64.5	60.9	60.2	60.2	60.1	60.1
208	B	2	64.2	65.1	61.4	60.5	60.3	60.2	60.1
209	B	2	65.2	65.7	61.8	60.9	60.9	60.8	60.6
210	B	2	58.9	62.2	59.7	59.1	59.1	59	59
211	B	2	61	63.8	61.6	61	61	60.9	60.9
212	B	3	63.6	65.8	62.7	62.2	62.2	62.1	62.1
213	B	2	58	61.1	58	57.2	57.2	57.1	57
214	B	2	59	62.2	59.1	58.4	58.4	58.3	58.2
215	B	2	60.7	64.1	61.3	60.6	60.6	60.5	60.4
216	B	2	64.9	68.2	66.1	65.8	65.8	65.7	65.7
217	B	2	59.5	63.7	62.6	62.4	62.4	62.4	62.4
218	B	2	62	66.4	65.6	65.4	65.4	65.4	65.4
219	B	2	65.5	69.8	69.2	69.1	69.1	69.1	69.1

Elyria-Swansea Receivers North of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 No Action South					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
108	B	2	62.9	66.7	65.4	65.2	65.2	65.2	65.1
109	B	2	64.9	68.9	67.6	67.5	67.4	67.4	67.4
110	B	2	60.8	65	62.5	62.2	62.1	62	61.9
111	B	1	61	65.5	63.1	62.8	62.7	62.7	62.6
112	B	2	61.7	66.2	63.9	63.6	63.5	63.5	63.4
113	B	3	62.3	66.9	64.7	64.5	64.4	64.3	64.2
114	B	2	60	64.5	62.7	62.6	62.6	62.6	62.5
115	B	2	59.1	64	60.1	59.3	59.1	59	58.9
116	B	2	59.7	65.1	61.2	60.6	60.4	60.3	60.2
117	B	2	60	66.1	61.8	61.2	61	60.9	60.8
118	B	2	60.1	66.9	62.2	61.8	61.6	61.5	61.4
119	B	1	60.1	67.8	63.1	62.8	62.6	62.5	62.4
120	B	2	59.7	66.1	63.4	63.3	63.2	63.2	63.1
121	B	2	58.9	64.7	60.3	59.7	59.4	59.3	59.2
122	B	3	59.8	65.9	61.4	60.8	60.6	60.5	60.4
123	B	2	59.8	67.4	63	62.7	62.5	62.4	62.4
124	B	2	59.6	66.9	64.5	64.3	64.3	64.2	64.2
125	B	2	60	65	59.1	58	57.6	57.4	57.1
126	B	4	60.9	66.4	60.4	59.6	59.3	59.1	58.9
127	B	4	61.7	67.5	62.2	61.5	61.2	61.1	60.9
128	B	2	62.5	68	64	63.7	63.5	63.4	63.3
129	B	4	60.2	65.2	59.2	58.3	57.9	57.6	57.4
130	B	2	61.1	66.5	60.5	59.6	59.3	59.1	59
131	B	3	61.4	66.9	61.7	61	60.8	60.6	60.4
132	B	4	63.7	68.5	63.6	63.2	63	62.9	62.7
133	B	2	62.4	65.1	58.4	57.3	56.6	56.1	55.8
134	B	2	63.7	66.1	59.3	58.1	57.6	57.2	56.8
135	B	4	65.5	67.3	60.8	59.6	59.2	58.8	58.5
136	B	3	66.8	68.6	61.6	61	60.5	60.2	60
137	B	3	67.7	68.5	62.3	61.9	61.6	61.4	61.2
138	B	2	62.2	64.7	58.4	56.9	56.3	55.8	55.5
139	B	3	63.8	65.8	59.1	57.9	57.3	56.9	56.6
140	B	3	65.9	67	60.5	59.5	59.1	58.7	58.4
141	B	2	67.5	67.8	61.4	60.8	60.5	60.2	60
142	C	1	63.1	65.2	59	57.4	56.5	56	55.6
143	B	1	65.1	66.1	59.2	57.9	57.1	56.5	56.1
144	B	2	66.7	67.2	59.9	58.8	58	57.4	57
145	B	2	67.6	67.4	60.7	59.7	58.9	58.4	58.1
146	B	2	63.3	64.5	58.5	57	56.2	55.7	55.3

Elyria-Swansea Receivers North of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 No Action South					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
147	B	4	65.4	66.2	59.2	58	57.2	56.7	56.3
148	B	4	66.2	66.6	59.5	58.3	57.7	57.3	56.9
149	B	3	64	66.3	60.1	58.5	57.6	57	56.6
150	B	3	65.1	66.9	60.5	58.9	57.9	57.2	56.8
151	B	2	68.9	69.1	62.1	61.1	60.2	59.6	59.2
152	B	2	71.2	73.3	61.8	61	60.4	60.1	59.8
153	B	3	68	69	64.6	64	63.7	63.5	63.4
154	B	2	70.2	71	66	65.2	64.9	64.6	64.2
155	B	1	66.9	69.7	67.4	67.2	67	67	66.9
156	B	1	68.3	71.1	69.1	68.9	68.8	68.8	68.7
157	B	3	62.1	66	62.1	61.5	61.3	61.1	61
158	B	2	62.8	66.7	62.7	62.1	61.8	61.7	61.6
159	B	2	63.7	67.4	63.1	62.6	62.4	62.2	62.1
160	B	3	64.4	68	63.4	63	62.8	62.6	62.5
161	B	1	66.7	70.6	66.4	66.2	66	65.9	65.8
162	B	3	61.9	65.9	61.4	60.6	60.4	60.2	60.1
163	B	3	62.6	66.6	62.1	61.4	61.1	60.9	60.8
164	B	3	63.5	67	62.5	62.1	61.8	61.6	61.5
165	B	2	59.7	65.2	61.7	61.2	61	61	60.9
166	B	3	60	65.7	62	61.4	61.3	61.2	61.1
167	B	1	60.7	66.3	62.4	61.7	61.5	61.4	61.2
168	B	2	62.4	67.7	62.9	62.5	62.3	62.1	62
169	B	3	63.6	68.6	63.5	63.1	62.8	62.6	62.5
170	B	2	67.7	71.2	68.3	68.2	68.1	68	68
171	B	2	59.4	64.6	59.3	58.2	57.8	57.5	57.2
172	B	2	59.9	65.3	59.4	58.1	57.6	57.3	57.1
173	B	3	61	66.3	59.7	59	58.5	58.2	57.9
174	B	3	62.5	67.5	60.8	60.2	59.8	59.4	59.1
175	B	3	63	68.3	61.9	61.4	61	60.7	60.5
176	B	2	66.6	70	66.8	66.7	66.6	66.5	66.4
177	C	1	64.1	69.1	62.8	62.3	61.9	61.6	61.4
178	E	1	65.3	68.7	62.2	61.6	61.2	60.8	60.6
179	B	2	61.2	65.8	58.2	56.5	55.7	55	54.5
180	B	2	62.8	67.1	59.2	58	57.2	56.6	56.2
181	B	1	64.4	68.2	60.5	59.5	58.8	58.3	57.9
182	B	2	61.9	65.6	58.2	56.5	55.7	55.1	54.7
183	B	2	63.5	66.9	59.1	57.9	57.1	56.6	56.2
184	B	2	65.4	68.1	60.4	59.4	58.8	58.3	57.9
185	B	2	67.6	69.1	61.5	60.7	60.2	59.8	59.5
186	B	2	69.3	69.6	64.5	64.2	64	63.8	63.7
187	B	2	63.1	64.9	57.6	55.9	55.1	54.5	54.2
188	B	2	64.8	66.8	58.8	57.2	56.6	56.1	55.8

Elyria-Swansea Receivers North of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 No Action South					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
189	B	2	66.8	67.6	60.2	58.8	58.2	57.7	57.4
190	B	2	69.1	68.7	61.5	60.3	59.7	59.3	59
191	B	2	71.4	69.4	63.5	63.1	62.7	62.5	62.3
192	B	1	62.7	64.4	58	56.3	55.4	55	54.6
193	B	2	63.9	65.9	58	56.5	55.7	55.2	54.8
194	B	2	65.8	66.7	59.4	57.8	57.1	56.6	56.2
195	B	2	68.2	68.2	60.9	59.5	58.9	58.5	58.2
196	B	2	70.8	68.9	62.3	61.7	61.3	61	60.8
197	B	2	61.5	63.1	57.8	56	55.1	54.4	54
198	B	2	62.9	66.3	57.6	55.8	55.1	54.6	54.3
199	B	2	64.6	67.6	58.7	56.7	56.1	55.6	55.3
200	B	2	65.7	66.1	59.5	57.5	57.1	56.7	56.6
201	B	2	68.9	66.9	60.7	59.8	59.4	59.1	58.9
202	B	2	61.5	63.1	57.8	56	54.9	54.4	54
203	B	2	63	65.7	57.8	55.9	55.1	54.6	54.3
204	B	2	64.7	67.7	58.9	56.7	56.1	55.6	55.3
205	B	2	67.7	67.3	60.8	58.7	58.1	57.7	57.3
206	B	2	59.4	61.5	59	58.2	57.9	57.8	57.7
207	B	2	62.6	64.1	59.9	58.5	58	57.7	57.6
208	B	2	64.2	66.4	59.8	58.2	57.7	57.4	57.2
209	B	2	65.2	66.7	60.7	58.4	57.9	57.6	57.4
210	B	2	58.9	61.4	59.4	58.8	58.6	58.5	58.5
211	B	2	61	63.1	61.1	60.5	60.3	60.2	60.1
212	B	3	63.6	65.3	61.7	60.6	60.3	60.1	60
213	B	2	58	60.2	57.7	57	56.8	56.7	56.6
214	B	2	59	61.5	59.2	58.5	58.2	58.1	58
215	B	2	60.7	63.2	60.7	60	59.7	59.5	59.4
216	B	2	64.9	67.3	65.5	65	64.8	64.8	64.7
217	B	2	59.5	63.5	62.7	62.6	62.5	62.5	62.5
218	B	2	62	66.2	65.5	65.4	65.4	65.4	65.3
219	B	2	65.5	69.5	69.1	69.1	69	69	69

Elyria-Swansea Receivers North of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 Revised Viaduct North					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
108	B	2	62.9	67.7	65.7	65.5	65.4	65.4	65.3
109	B	2	64.9	70.6	68.2	68.1	68	68	67.9
110	B	2	60.8	66.7	63.3	62.8	62.6	62.5	62.4
111	B	1	61	67.2	63.8	63.5	63.3	63.2	63.1
112	B	2	61.7	68.2	64.6	64.4	64.3	64.2	64.1
113	B	3	62.3	69.6	66	65.8	65.7	65.6	65.5
114	B	2	60	70.9	68.4	68.2	68.2	68.1	68
115	B	2	59.1	66.1	61.5	60.7	60.4	60.2	60
116	B	2	59.7	67.5	62.6	62.1	61.8	61.7	61.5
117	B	2	60	69.1	63.8	63.3	63	62.8	62.7
118	B	2	60.1	70	65.3	64.9	64.7	64.5	64.4
119	B	1	60.1	72.2	68.5	68.3	68.2	68.1	68
120	B	2	59.7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
121	B	2	58.9	67.2	61.8	61.2	61	60.7	60.5
122	B	3	59.8	68.8	63.4	62.9	62.7	62.4	62.3
123	B	2	59.8	71.5	66.7	66.5	66.4	66.3	66.2
124	B	2	59.6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
125	B	2	60	67.8	60.8	59.6	59.1	58.7	58.4
126	B	4	60.9	70.2	61.9	61	60.7	60.4	60.1
127	B	4	61.7	69.8	64.2	63.8	63.6	63.4	63.3
128	B	2	62.5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
129	B	4	60.2	68.5	60.9	59.9	59.4	59.1	58.8
130	B	2	61.1	69.4	61.8	61.2	60.8	60.5	60.3
131	B	3	61.4	69.4	63.6	63.2	63	62.8	62.6
132	B	4	63.7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
133	B	2	62.4	67.2	60	59	58.4	58	57.6
134	B	2	63.7	67.8	60.6	59.9	59.5	59	58.7
135	B	4	65.5	68.3	61.8	61.2	60.9	60.5	60.2
136	B	3	66.8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
137	B	3	67.7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
138	B	2	62.2	66.7	60	58.9	58.3	57.9	57.5
139	B	3	63.8	67.6	60.6	60	59.5	59.1	58.7
140	B	3	65.9	68.4	61.9	61.4	61	60.7	60.4
141	B	2	67.5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
142	C	1	63.1	67.2	60.2	59.1	58.5	58.1	57.6
143	B	1	65.1	67.9	60.6	60	59.4	59	58.6
144	B	2	66.7	68.6	61.3	60.8	60.4	60	59.7
145	B	2	67.6	67.9	61.8	61.5	61.2	61	60.8
146	B	2	63.3	66.7	59.8	59	58.5	58	57.6

Elyria-Swansea Receivers North of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 Revised Viaduct North					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
147	B	4	65.4	68	60.8	60.2	59.7	59.2	58.8
148	B	4	66.2	68.4	61.2	60.7	60.4	60	59.7
149	B	3	64	69	61.6	60.3	59.7	59.1	58.7
150	B	3	65.1	69.4	61.5	60.7	60	59.5	59
151	B	2	68.9	69.6	63.1	62.7	62.4	62.2	62
152	B	2	71.2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
153	B	3	68	70.7	65	64.6	64.3	64.1	63.9
154	B	2	70.2	70.8	65.4	65.2	65	64.9	64.8
155	B	1	66.9	71.3	67.1	66.9	66.7	66.6	66.5
156	B	1	68.3	72.1	68.5	68.3	68.2	68.1	68
157	B	3	62.1	68.5	62.8	62.3	61.9	61.7	61.5
158	B	2	62.8	69.5	63.5	63	62.7	62.4	62.2
159	B	2	63.7	70.3	64.1	63.7	63.3	63.1	62.9
160	B	3	64.4	70.2	64.7	64.3	64	63.7	63.5
161	B	1	66.7	70.9	67.1	67	66.8	66.7	66.6
162	B	3	61.9	68.5	62.6	62	61.7	61.4	61.2
163	B	3	62.6	69.5	63.4	62.8	62.5	62.2	62
164	B	3	63.5	69.8	64.1	63.7	63.3	63.1	62.9
165	B	2	59.7	68.1	63	62.5	62.3	62.1	62
166	B	3	60	68.7	63.2	62.7	62.5	62.3	62.1
167	B	1	60.7	69.4	63.5	63.1	62.8	62.6	62.4
168	B	2	62.4	70.6	64.4	64	63.7	63.4	63.2
169	B	3	63.6	70.9	65.1	64.7	64.5	64.2	64.1
170	B	2	67.7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
171	B	2	59.4	68.8	62.3	61.1	60.6	60	59.6
172	B	2	59.9	68.9	61.4	60.7	60.1	59.7	59.4
173	B	3	61	69.8	62.2	61.5	61	60.6	60.2
174	B	3	62.5	70.3	63.4	62.8	62.4	62	61.7
175	B	3	63	70.4	64.3	63.9	63.6	63.3	63
176	B	2	66.6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
177	C	1	64.1	71.4	64.7	64.5	64.3	64.2	64
178	E	1	65.3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
179	B	2	61.2	69.1	61.4	60.1	59.3	58.7	58.2
180	B	2	62.8	70.2	62.4	61.3	60.5	60	59.5
181	B	1	64.4	70.7	63.1	62.3	61.8	61.3	60.9
182	B	2	61.9	68.9	61.4	60.1	59.3	58.7	58.2
183	B	2	63.5	70	62.3	61.1	60.4	59.9	59.4
184	B	2	65.4	70.7	63.2	62.5	61.9	61.5	61.1
185	B	2	67.6	71.6	64.3	64	63.7	63.4	63.1
186	B	2	69.3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
187	B	2	63.1	68.2	61.5	60.3	59.8	59.5	59.2
188	B	2	64.8	68.6	61.6	60.4	59.9	59.5	59.3

Elyria-Swansea Receivers North of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 Revised Viaduct North					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
189	B	2	66.8	69.8	62.8	62.2	61.7	61.4	61.2
190	B	2	69.1	70.8	63.9	63.6	63.3	63	62.8
191	B	2	71.4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
192	B	1	62.7	66.9	59.9	58.5	58	57.6	57.4
193	B	2	63.9	67.7	60.6	59.5	58.9	58.6	58.3
194	B	2	65.8	68.8	61.4	60.7	60.2	59.9	59.6
195	B	2	68.2	70	62.8	62.4	62	61.8	61.7
196	B	2	70.8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
197	B	2	61.5	65.9	60.5	59.6	59.4	59.2	59
198	B	2	62.9	67	61.1	60.4	60.1	59.9	59.7
199	B	2	64.6	68.2	61.7	61.3	61	60.8	60.6
200	B	2	65.7	67.8	61.8	61.4	61.2	61.1	60.9
201	B	2	68.9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
202	B	2	61.5	66	60.4	59.4	59.1	58.9	58.8
203	B	2	63	67.3	61.1	60.4	60.1	59.9	59.8
204	B	2	64.7	68.6	61.8	61.4	61.1	60.9	60.7
205	B	2	67.7	71.5	64.1	63.8	63.6	63.3	63.2
206	B	2	59.4	64	61.4	61.1	61	60.9	60.8
207	B	2	62.6	66.4	63.4	63.2	63	62.9	62.8
208	B	2	64.2	67.1	64.9	64.7	64.5	64.5	64.4
209	B	2	65.2	68.8	67.3	67.3	67.3	67.2	67.2
210	B	2	58.9	63.7	60.9	60.6	60.5	60.5	60.4
211	B	2	61	65.4	62.9	62.7	62.6	62.5	62.4
212	B	3	63.6	67.3	64.7	64.5	64.4	64.3	64.3
213	B	2	58	63	59.4	58.9	58.8	58.7	58.6
214	B	2	59	64.2	60.7	60.2	60	59.9	59.8
215	B	2	60.7	65.5	62.2	61.9	61.8	61.7	61.6
216	B	2	64.9	68.7	66.6	66.5	66.4	66.4	66.3
217	B	2	59.5	64.5	63	62.8	62.7	62.7	62.7
218	B	2	62	66.2	64.9	64.7	64.7	64.6	64.6
219	B	2	65.5	67.9	66.7	66.7	66.6	66.6	66.6

Elyria-Swansea Receivers North of I-70							
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))				
			Existing	2035 Revised Viaduct South			
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls
108	B	2	62.9	67.4	66.1	65.9	65.8
109	B	2	64.9	70.3	68.6	68.5	68.4
110	B	2	60.8	66.2	63.8	63.5	63.3
111	B	1	61	66.9	64.3	64.1	64
112	B	2	61.7	67.7	65.1	64.9	64.7
113	B	3	62.3	69	66	65.6	65.4
114	B	2	60	70.7	65.7	64.9	64.5
115	B	2	59.1	65.6	61.6	61	60.7
116	B	2	59.7	66.7	62.1	61.6	61.1
117	B	2	60	68	62.6	61.5	60.8
118	B	2	60.1	69.2	63.2	61.7	61
119	B	1	60.1	70.8	64	62.3	61.6
120	B	2	59.7	#N/A	#N/A	#N/A	#N/A
121	B	2	58.9	66.3	61.3	60.5	60
122	B	3	59.8	67.8	62.4	61.3	60.5
123	B	2	59.8	70.4	63.6	61.9	61.2
124	B	2	59.6	#N/A	#N/A	#N/A	#N/A
125	B	2	60	66.4	60.1	59	58.2
126	B	4	60.9	68	61.2	59.8	59.1
127	B	4	61.7	70.7	62	60.9	60.2
128	B	2	62.5	#N/A	#N/A	#N/A	#N/A
129	B	4	60.2	66.9	60.4	59.2	58.6
130	B	2	61.1	68.1	61.5	60.1	59.4
131	B	3	61.4	70.6	61.6	60.5	59.8
132	B	4	63.7	#N/A	#N/A	#N/A	#N/A
133	B	2	62.4	67.5	60.2	58.9	58.2
134	B	2	63.7	68.7	60.8	59.6	59
135	B	4	65.5	70.4	61.4	60.8	60.3
136	B	3	66.8	70.6	62.5	62	61.7
137	B	3	67.7	#N/A	#N/A	#N/A	#N/A
138	B	2	62.2	66.8	60	58.7	58
139	B	3	63.8	68.5	60.6	59.5	58.9
140	B	3	65.9	70.3	61.3	60.7	60.2
141	B	2	67.5	69.2	62.5	62.1	61.9
142	C	1	63.1	67.6	60.6	59.2	58.6
143	B	1	65.1	68.5	61	59.8	59.1
144	B	2	66.7	69.8	61.9	61.1	60.5
145	B	2	67.6	69.8	62.9	62.3	61.9
146	B	2	63.3	67	60	58.7	58.1

Elyria-Swansea Receivers North of I-70							
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))				
			Existing	2035 Revised Viaduct South			
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls
147	B	4	65.4	68.8	61	59.9	59.3
148	B	4	66.2	69.1	61.4	60.7	60.1
149	B	3	64	68.9	61.9	60.6	59.8
150	B	3	65.1	69.6	62.4	61.2	60.4
151	B	2	68.9	71.5	64.3	63.7	63.2
152	B	2	71.2	72.1	65.5	65.1	64.7
153	B	3	68	71.5	65.1	64.5	64
154	B	2	70.2	71.9	65.9	65.4	65.1
155	B	1	66.9	71.6	66.9	66.5	66.3
156	B	1	68.3	72.5	68.5	68.3	68.1
157	B	3	62.1	67.5	61.3	60.4	60
158	B	2	62.8	68.5	62.5	61.7	61.3
159	B	2	63.7	69.5	63.3	62.7	62.3
160	B	3	64.4	70.3	64	63.4	63.1
161	B	1	66.7	72.1	66.8	66.4	66.2
162	B	3	61.9	67.6	61.2	60.3	59.8
163	B	3	62.6	68.5	62.3	61.4	61
164	B	3	63.5	69.2	63	62.4	62.1
165	B	2	59.7	67.1	61.5	60.7	60.3
166	B	3	60	67.8	62.1	61.3	61
167	B	1	60.7	68.9	63	62.3	61.9
168	B	2	62.4	70.4	64	63.4	63
169	B	3	63.6	71.4	64.7	64.1	63.8
170	B	2	67.7	71.6	67.1	66.8	66.6
171	B	2	59.4	67.4	61.2	60.2	59.7
172	B	2	59.9	68.2	60.9	59.8	59.2
173	B	3	61	69.4	61.6	60.7	60.2
174	B	3	62.5	70.4	62.7	61.8	61.3
175	B	3	63	70.9	63.5	62.8	62.2
176	B	2	66.6	71.1	64.9	64.4	64.1
177	C	1	64.1	72	64	63.2	62.6
178	E	1	65.3	72	63.8	63	62.4
179	B	2	61.2	68.5	61.3	59.8	59
180	B	2	62.8	69.9	62.3	60.8	60.1
181	B	1	64.4	71.1	63.3	62	61.2
182	B	2	61.9	68.2	61.1	59.6	58.9
183	B	2	63.5	69.5	62.2	60.7	59.9
184	B	2	65.4	70.8	63.3	61.9	61.2
185	B	2	67.6	71.7	63.6	62.8	62.2
186	B	2	69.3	71.6	63.9	63.4	63
187	B	2	63.1	67.5	61	59.6	59.1
188	B	2	64.8	68.9	62.1	60.8	60.3

Elyria-Swansea Receivers North of I-70							
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))				
			Existing	2035 Revised Viaduct South			
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls
189	B	2	66.8	70.4	63.1	62.1	61.6
190	B	2	69.1	71.6	64.2	63.5	63.1
191	B	2	71.4	71.9	65.2	64.8	64.5
192	B	1	62.7	67	60.6	59.2	58.6
193	B	2	63.9	68	61.4	60	59.5
194	B	2	65.8	69.5	62.2	61.2	60.7
195	B	2	68.2	71	63.5	62.9	62.5
196	B	2	70.8	72.4	64.9	64.5	64.2
197	B	2	61.5	66.1	61.3	60.3	60
198	B	2	62.9	67.4	62.1	61.1	60.8
199	B	2	64.6	69.1	62.6	62	61.7
200	B	2	65.7	70	63.1	62.5	62.1
201	B	2	68.9	72.4	65.2	64.7	64.4
202	B	2	61.5	66	61.1	60.1	59.8
203	B	2	63	67.4	62	61	60.7
204	B	2	64.7	69.2	62.7	62	61.7
205	B	2	67.7	72.2	64.2	63.6	63.2
206	B	2	59.4	63.4	61	60.7	60.6
207	B	2	62.6	66	63.3	62.9	62.7
208	B	2	64.2	67.3	64.6	64.4	64.2
209	B	2	65.2	68.5	66.1	66	66
210	B	2	58.9	63.4	61	60.5	60.4
211	B	2	61	65	62.6	62.3	62.2
212	B	3	63.6	67	64.3	64	63.9
213	B	2	58	62.6	59.4	58.8	58.7
214	B	2	59	63.6	60.6	60	59.9
215	B	2	60.7	65.3	62.2	61.7	61.5
216	B	2	64.9	68.2	66	65.8	65.7
217	B	2	59.5	63.8	62.3	62.1	62.1
218	B	2	62	65.9	64.7	64.5	64.5
219	B	2	65.5	68.5	67.6	67.5	67.5

Elyria-Swansea Receivers North of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Basic Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
1	B	2	60.7	76.1	71.1	69.1	67.9	67	66.4	65.8	65.2
2	B	3	62.4	75.6	72.8	71.2	69.5	68.5	67.6	66.7	66.1
3	B	3	63.6	74.8	73.1	71.9	69.9	68.3	67.2	66.2	65.4
4	B	2	60.9	71.6	68.7	66.8	65.6	64.6	64	63.6	63.1
5	B	2	61.4	74.6	71.3	70.1	68.2	66.8	65.8	65.1	64.4
6	B	4	65.4	73.6	71.7	70.5	69.2	68.1	67.4	66.9	66
7	B	2	62.2	70.1	69	68.3	66.6	65.5	64.6	64.3	63.8
8	B	4	61.6	71.6	69.9	68.8	66.9	65.4	64.4	63.5	62.8
9	B	3	65.7	73.3	71.7	70.6	69.2	68	67.2	66.4	65.8
10	B	4	67	72.1	70.8	70.3	69.8	69.1	68.3	67.6	66.9
11	B	3	62.1	72.1	69.6	68.4	67	66	65.5	65.1	65.1
12	B	3	66.4	70.1	68.4	67.8	67.3	66.8	66.5	66.2	65.9
13	B	1	65.2	69.8	68.9	67	65.9	65.3	64.9	64.7	64.2
14	B	2	63	71.4	69.9	68.6	67.2	65.8	64.6	63.7	63
15	B	2	64.2	68.8	66.8	66.1	65.3	64.3	63.5	63	62.5
16	B	2	66.2	71	70.6	70.4	69.6	69.2	68.9	68.7	68.6
17	B	3	61.4	69.5	68.4	67.7	66.7	65.6	64.4	63.6	63
18	B	1	61.9	69.5	67.4	66.6	65.5	64.5	63.7	63.1	62.7
19	E	1	63.9	68.6	68.4	68.2	67.3	66.3	65.9	65.6	65.4
20	B	3	62.6	68.7	68.2	67.9	67.2	66.4	65.4	64.9	64.3
21	B	3	65.3	68	66.3	65	64.2	63.4	62.6	61.9	61.4
22	B	2	65.4	69.9	68.3	67.9	67.5	67.3	67	66.8	66.6
23	B	1	61.5	68.8	67.6	66.9	65.8	64.5	63.3	62.4	61.5
24	B	4	62.2	68.6	67.1	66.1	65	63.9	62.9	62	61.2
25	B	3	63.9	67.6	65.9	65.1	64.2	63.3	62.5	62.1	61.6
26	E	2	65.9	70.2	70.1	70	69.7	69.3	69.1	68.8	68.7
27	B	2	63	65.9	63.7	63	62.3	61.5	60.8	60.3	60
28	B	2	64.7	68.4	67	66.6	66.2	65.9	65.5	65.2	65
29	B	2	61	67.6	66.8	66.2	65.3	64.3	63.3	62.2	61.4
30	B	2	62.1	66.8	67.1	67.1	67	66.7	66.1	65.6	65.4
31	B	2	61.2	67	65.1	64.6	63.8	62.9	62.2	61.7	61.3
32	B	1	64.3	66.4	64.9	64.7	64.4	64.2	63.9	63.7	63.5
33	C	1	63.8	65.2	63.4	62.7	62	61.4	60.9	60.6	60.2
34	B	2	61.8	67.2	67.1	66.9	66.6	66.1	65.4	64.8	64.3
35	E	1	62.5	67.1	67.2	67.2	67.1	67	66.5	66	65.6
36	B	3	63.7	64.6	62.4	61.9	61.2	60.5	60.1	59.6	59.4
37	B	1	60.7	67.3	66.4	66	65.5	65	64.7	64.3	64.2
38	B	2	62.8	65.4	63.6	63	62.4	61.6	61	60.7	60.2

Elyria-Swansea Receivers North of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Basic Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
39	B	3	63.4	64.3	63.1	62.9	62.7	62.4	62.1	61.9	61.7
40	B	1	63.4	65.3	64	63.7	63.5	63.2	62.9	62.6	62.5
41	E	1	61	65.8	66.2	66.2	66.2	66.1	65.8	65.3	65.1
42	B	1	62	64.1	61.9	61.3	60.6	59.9	59.4	59.1	58.8
43	B	1	65.4	69.3	69.3	69.2	69.1	68.9	68.7	68.5	68.4
44	B	1	60.4	66.1	65.3	64.9	64.4	63.8	63.1	62.4	61.9
45	B	2	61.1	66.1	64.4	63.8	62.8	62	61.1	60.2	59.4
46	B	2	60.6	65	63.5	63	62.2	61.2	60.4	59.7	59
47	E	1	62.1	62.8	61.1	60.9	60.6	60.4	60.1	59.9	59.8
48	B	2	61	65.7	65.8	65.8	65.7	65.6	65.6	65.4	65.1
49	B	2	64.2	68.8	68.9	68.9	68.8	68.8	68.7	68.6	68.5
50	B	1	59.6	65.4	64.7	64.5	64.1	63.7	63	62.6	62.1
51	B	2	60.8	63.7	62.3	61.6	61	60.4	59.8	59.2	58.7
52	B	2	61.2	63.2	61.5	61	60.5	59.9	59.3	58.9	58.4
53	B	2	61.6	62.9	61	60.5	60	59.5	59.1	58.8	58.3
54	B	2	61.8	62.2	60.5	59.9	59.3	58.9	58.6	58.1	57.8
55	B	2	61.8	61.7	60.6	60.4	60	59.7	59.4	59.1	59
56	B	1	61.7	62	60.3	60.1	59.8	59.4	59.2	59.1	58.9
57	B	1	60.5	65.3	65	65	64.9	64.8	64.6	64.3	63.9
58	B	1	59.7	64.7	63.5	63.1	62.6	62	61.5	61	60.5
59	B	2	61.9	62.4	60.8	60.5	60.2	60	59.7	59.6	59.4
60	B	2	60	64.3	62.8	62.2	61.6	61	60.5	60	59.7
61	B	2	61.1	61.2	59.6	59.4	59	58.7	58.4	58.2	58.1
62	B	1	64.2	67.9	68	67.9	67.9	67.8	67.8	67.7	67.7
63	B	2	61.3	61.6	60	59.8	59.6	59.4	59.2	59.1	59
64	C	1	58.8	64.1	63.3	63.1	62.8	62.4	62	61.6	61
65	B	3	63.7	72.3	71.5	71.4	71.3	71.3	71.2	71.2	71.1
66	B	2	65.6	72.2	71.4	71.3	71.2	71.2	71.1	71.1	71.1
67	C	1	63.9	71.2	71.1	71.1	71.1	71	71	71	71
68	B	2	67.5	71	70.8	70.8	70.8	70.8	70.7	70.7	70.7
69	B	2	68.7	71.7	69.9	69.7	69.5	69.4	69.4	69.3	69.3
70	B	2	68.7	71	69.9	69.7	69.6	69.5	69.4	69.4	69.3
71	B	2	68.3	71.7	70.7	70.6	70.5	70.4	70.3	70.3	70.2
72	B	2	68.1	70.9	68.6	68.3	68.1	68	67.9	67.8	67.8
73	B	1	65.4	68.5	67.9	67.8	67.7	67.7	67.6	67.6	67.5
74	C	1	63.5	67.5	67.3	67.3	67.3	67.3	67.2	67.2	67.2
75	B	3	63.2	66.5	65.7	65.6	65.5	65.4	65.4	65.3	65.2
76	B	3	66.6	67.9	67.2	67.1	67	66.9	66.8	66.8	66.7
77	B	2	67	67.8	62.8	61.5	60.6	60	59.5	59.2	58.9
78	B	2	65.9	65.5	64.8	64.7	64.6	64.6	64.5	64.4	64.3
79	B	2	64.7	65	64.4	64.4	64.4	64.4	64.4	64.3	64.3
80	B	2	64.7	64.5	63.7	63.6	63.5	63.4	63.3	63.2	63.2

Elyria-Swansea Receivers North of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Basic Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
81	B	2	65.7	64.3	63.7	63.6	63.6	63.5	63.5	63.5	63.5
82	B	2	66.6	66.1	63.2	62.9	62.5	62.3	62.2	62.1	62
83	B	2	66.7	65.2	63	62.8	62.6	62.4	62.3	62.2	62.1
84	B	2	66.4	65.2	64.1	64	63.9	63.8	63.6	63.6	63.5
85	B	3	61.7	63	62	61.9	61.8	61.7	61.6	61.5	61.4
86	B	2	65.7	65.1	64	63.9	63.8	63.7	63.6	63.6	63.4
87	B	2	66	65.3	61.3	60.7	60.2	60	59.8	59.6	59.5
88	B	2	65.1	64.1	63.2	63.1	63.1	63	62.9	62.8	62.6
89	C	1	57.7	53.7	53.1	53	52.9	52.9	52.8	52.8	52.7
90	B	3	63.7	61.5	60.4	60.3	60.2	60.1	60	60	59.9
91	B	2	65.4	64.8	61	59.9	59	58.4	57.9	57.5	57.1
92	B	2	64	61.3	59.4	59.3	59.3	59.2	59.2	59.1	59.1
93	B	2	65.1	63.3	62.1	61.9	61.8	61.7	61.5	61.4	61.3
94	B	2	64.8	62.6	60.6	60.5	60.3	60.2	60.2	60.1	60
95	B	2	65.1	63.2	59.6	59.3	58.7	58.4	58.2	58	57.8
96	B	2	65	61.6	59.1	58.9	58.6	58.4	58.3	58.2	58.1
97	B	2	62.8	59.5	58.4	58.4	58.3	58.3	58.2	58.2	58.2
98	B	3	64.5	63.1	62.1	62	62	61.8	61.7	61.5	61.3
99	B	2	60.2	60.6	59.1	59	58.9	58.8	58.8	58.7	58.7
100	B	2	64.5	62.7	58.6	58.2	57.5	57.2	57	56.7	56.5
101	B	3	63	59.9	58.7	58.6	58.5	58.4	58.3	58.3	58.2
102	B	3	64.5	62	60.6	60.4	60.2	60.1	60	59.8	59.6
103	C	1	60.9	57.5	55.8	55.7	55.6	55.6	55.5	55.5	55.4
104	B	3	63.8	62.5	59.5	58.9	57.8	57.3	56.8	56.4	56
105	B	2	63.7	61.4	60.5	60.4	60.4	60.2	60	59.8	59.5
106	B	2	63.2	60.4	57.3	57.2	57	56.9	56.8	56.6	56.5
107	B	2	63.6	61.3	57.3	57	56.3	56	55.8	55.6	55.4
108	B	2	62.7	59.6	57	57	56.9	56.8	56.8	56.7	56.6
109	B	2	64.8	64.9	61.5	60.4	59.4	58.6	58	57.5	57
110	B	2	63.5	60.4	57.6	57.5	57.3	57.1	57	56.8	56.7
111	B	2	61.7	58.1	55.8	55.7	55.6	55.6	55.5	55.5	55.4
112	B	2	63.6	63.1	60.1	59.2	58.3	57.7	57.2	56.7	56.3
113	B	1	59.3	58.8	57.2	57	57	56.8	56.7	56.6	56.6
114	B	2	62.9	60.8	56.7	56.4	55.6	55.3	55	54.8	54.6
115	B	1	62.1	58.1	57.1	57	56.8	56.8	56.7	56.7	56.6
116	B	2	63.9	60.7	59	58.8	58.7	58.5	58.3	58.1	58
117	B	2	62.5	58.3	56.5	56.5	56.4	56.4	56.3	56.2	56.1
118	B	2	62.1	58.4	55.3	55.1	54.8	54.6	54.4	54.3	54.1
119	B	2	62.2	60.1	56.1	55.8	55.2	54.8	54.6	54.3	54.2
120	B	1	61.4	58.8	55.8	55.7	55.5	55.4	55.2	55.1	55
121	B	2	65.3	64.9	59.2	58.6	57.7	57.3	56.9	56.6	56.3
122	B	1	61.9	60.3	59.2	59	58.8	58.6	58.2	57.9	57.5

Elyria-Swansea Receivers North of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Basic Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
123	B	2	62.4	61	57.6	56.7	56.1	55.5	55	54.6	54.3
124	B	2	61.8	60.6	56.5	56	55.2	54.7	54.3	54	53.6
125	B	1	61.5	59.5	55.7	55.4	54.8	54.5	54.2	53.9	53.7
126	B	1	60.6	58.3	55.1	54.9	54.8	54.7	54.6	54.5	54.4
127	B	1	60.3	59.1	58.2	58	57.9	57.8	57.6	57.2	56.9
128	B	1	59.2	58.2	56.9	56.7	56.5	56.4	56.3	56.1	55.9
129	B	2	61.5	59.6	55.9	55.5	54.8	54.3	54	53.7	53.3
130	B	1	59.3	56.3	53.7	53.6	53.5	53.4	53.3	53.2	53.1
131	B	1	60	57.2	54.1	54	53.9	53.8	53.7	53.6	53.5
132	B	1	58.5	56.3	54.3	54.2	54.1	53.9	53.8	53.7	53.7
133	B	1	58.2	55.8	54.1	54	53.8	53.7	53.6	53.5	53.4
134	B	1	58.9	57.2	55.1	55	54.8	54.7	54.6	54.5	54.4
135	B	2	60.5	59.1	55.5	55.1	54.2	53.8	53.4	53.1	52.8
136	B	2	62	62.8	58.7	58.1	57.2	56.7	56.3	55.9	55.6
137	B	2	60.6	59.5	56.6	56.1	55.5	55	54.6	54.3	54
138	B	2	60.3	59.6	56	55.4	54.5	54.1	53.7	53.3	52.9
139	B	2	60	60.4	56.9	56.2	55.4	54.9	54.5	54.2	53.9
140	B	2	59.1	58	55	54.6	54.2	53.8	53.5	53.2	53
141	B	1	58.9	58.1	54.4	53.9	53.2	52.7	52.4	52	51.8
142	B	2	58.4	58.4	55.5	55	54.5	54.2	53.9	53.7	53.5
143	B	2	57.9	57	53.5	53.2	52.7	52.4	52.2	52	51.8
144	B	1	60.1	60.5	57.1	56.7	56.3	56	55.8	55.6	55.5
145	B	2	57.2	57.3	54.9	54.5	54.2	53.9	53.7	53.6	53.5

Elyria-Swansea Receivers North of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Modified Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
1	E	1	61	65.7	66.2	66.2	66.1	66.1	65.8	65.3	65.1
2	B	2	62.1	66.7	67.1	67.1	67	66.7	66	65.6	65.3
3	E	1	62.5	67.2	67.2	67.2	67.1	67	66.6	66.1	65.7
4	E	1	63.9	68.5	68.3	68.2	67.5	66.4	65.9	65.7	65.5
5	B	1	65.2	69.7	68.8	66.9	65.9	65.3	65	64.8	64.3
6	B	1	60.5	65.4	65.6	65.6	65.5	65.5	65.4	65.4	65.2
7	B	1	61	65.9	66.1	66.1	66	65.9	66	65.9	65.6
8	B	2	64.2	69.4	69.4	69.4	69.4	69.3	69.3	69.2	69.1
9	B	1	64.2	68.8	68.8	68.7	68.7	68.6	68.6	68.6	68.5
10	B	2	66.2	71.5	70.9	70.7	69.8	69.3	69.1	68.9	68.8
11	E	2	65.9	70.7	70.4	70.3	70.1	69.6	69.3	69.1	69
12	B	1	65.3	69.7	69.5	69.5	69.4	69.2	69.1	68.9	68.8
13	B	2	61.8	67.3	67.1	67	66.7	66.3	65.5	64.9	64.5
14	B	3	62.6	68.7	68.2	68	67.4	66.2	65.2	64.7	64.3
15	B	2	62.2	70	69.2	68.6	66.9	65.8	65.1	64.8	64.6
16	B	1	60.5	65.5	65.1	65	64.9	64.7	64.4	64.1	63.7
17	B	2	60.9	71.2	68.8	66.8	65.3	64.5	63.8	63.3	63.1
18	B	1	59.6	64.9	64.3	64.1	63.9	63.5	63.1	62.5	62.1
19	B	1	60.7	66.7	65.9	65.7	65.2	64.5	64	63.5	63.3
20	B	1	60.7	75.5	70.2	68.4	67.3	66.5	65.7	65	64.4
21	B	1	61.5	68.1	66.8	66.5	65.7	64.5	63.3	62.4	61.6
22	B	4	61.6	71.1	69.1	68.2	67	65.8	65.1	64.5	64.1
23	C	1	58.8	64.1	63.1	63	62.6	62.3	62	61.5	61.1
24	B	2	61.4	74.1	70.8	69.7	68	66.7	65.7	65	64.5
25	B	1	60.4	65.8	64.9	64.7	64.2	63.6	62.8	62	61.3
26	B	2	61	67.3	66.4	66	65.3	64.5	63.3	62.4	61.7
27	B	3	61.4	69.1	67.9	67.3	66.4	65.4	64.1	63	62.1
28	B	2	60.6	65.3	63.4	62.9	62.1	61.2	60.7	60	59.5
29	B	1	59.7	64.7	63.4	63.1	62.6	62.1	61.5	61	60.5
30	B	3	62.1	72.1	69.6	68.5	66.8	65.8	65.3	65	64.9
31	B	2	61.2	67	65.1	64.7	64	63.3	63	62.4	62
32	B	3	62.4	75.7	72.5	70.9	69.1	68	67.2	66.5	66
33	B	1	61.8	69.6	67.5	66.7	65.4	64.8	64.1	63.8	63.5
34	B	2	63	71.5	69.8	68.4	67.2	65.6	64.4	63.5	62.8
35	B	2	61.1	66.2	64.4	63.7	62.8	61.9	61.2	60.4	59.5
36	B	4	62.2	68.7	67.1	66.1	65.1	63.9	62.8	62	61.2
37	B	3	63.6	74.9	73	71.7	69.8	68.1	67	66.1	65.5
38	B	2	60	64.5	62.8	62.2	61.6	61	60.7	60.2	60
39	B	2	60.8	63.9	62.1	61.6	61	60.4	59.9	59.4	59

Elyria-Swansea Receivers North of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Modified Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
40	B	2	64.2	68.9	66.8	65.9	65	64	63.2	62.7	62.4
41	B	1	62	64.3	62	61.3	60.7	60.1	59.6	59.5	59.2
42	B	4	65.4	73.9	71.7	70.5	69.2	68.1	67.4	66.8	66.4
43	B	2	63	66	63.8	63.1	62.4	61.6	60.9	60.5	60.3
44	B	3	63.9	67.7	65.8	65	64.2	63.2	62.5	62.1	61.5
45	B	3	65.8	73.5	71.6	70.4	69.1	68	67.1	66.4	65.9
46	B	2	62.8	65.4	63.6	63	62.2	61.5	61	60.6	60.2
47	B	2	61.2	63.5	61.8	61.1	60.6	60	59.5	59	58.6
48	B	2	61.6	63.2	61.3	60.6	60	59.3	58.9	58.4	57.9
49	B	2	67.2	74.4	73.1	72.5	71.6	70.9	70.4	70.1	69.8
50	B	1	66.4	72.6	70.5	69.8	69.2	68.7	68.4	68.1	67.9
51	B	2	65.5	69.9	67.9	67.2	66.6	66.1	65.8	65.7	65.5
52	C	1	63.8	66.5	64.2	63.4	62.5	61.9	61.4	60.9	60.7
53	B	4	67	72.9	71.8	71.3	70.6	69.9	69.2	68.5	68
54	B	3	65.3	68.5	66.2	65.2	64.4	63.4	62.6	62	61.4
55	B	3	63.7	65.1	62.6	62.3	61.6	61.2	60.8	60.5	60.3
56	B	2	61.8	62.4	60.6	60.1	59.5	58.9	58.5	58.1	57.7
57	B	2	61.8	62.1	61.1	60.8	60.5	60.1	59.7	59.4	59.2
58	B	2	65.4	70.3	68.9	68.5	68.1	67.8	67.6	67.3	67.1
59	B	3	63.4	65	63.8	63.6	63.3	63	62.8	62.5	62.3
60	B	1	64.3	67	65.7	65.5	65.2	64.9	64.7	64.4	64.3
61	B	2	64.7	68.5	67.1	66.8	66.4	66	65.6	65.3	65
62	B	1	63.4	65.6	64.1	63.9	63.6	63.2	62.8	62.6	62.4
63	B	1	61.7	62.4	60.8	60.5	60.2	59.8	59.5	59.3	59.2
64	B	2	61.1	61.4	60	59.7	59.3	58.9	58.6	58.4	58.2
65	E	1	62.1	63.1	61.3	61.1	60.7	60.5	60.2	60	59.9
66	B	1	61.9	62.6	60.9	60.6	60.3	60	59.8	59.6	59.4
67	B	1	67.3	67.9	66.9	66.8	66.7	66.6	66.4	66.3	66.2
68	B	3	66.6	66.3	65.2	65.1	64.9	64.8	64.7	64.6	64.6
69	B	2	65.7	64.6	63.5	63.3	63.1	63	62.9	62.8	62.7
70	B	2	65.1	63	61.7	61.5	61.4	61.2	61.1	61	60.9
71	B	3	64.5	61.7	60.4	60.2	60	59.9	59.7	59.5	59.4
72	B	2	63.9	60.4	58.9	58.7	58.5	58.3	58.1	57.9	57.7
73	B	1	61.9	60.2	58.9	58.7	58.4	58.1	57.7	57.2	56.8
74	E	1	66.6	70.8	69.4	69.2	69.1	69	68.8	68.7	68.6
75	B	2	65.9	64.3	63.4	63.2	63.1	63	62.8	62.7	62.6
76	B	2	65.1	63.7	62.4	62.3	62.2	62	61.9	61.7	61.5
77	B	2	63.7	61.1	59.9	59.8	59.7	59.6	59.3	59	58.7
78	B	2	62.5	57.4	55.7	55.5	55.4	55.3	55.2	55.1	54.9
79	B	3	64.5	62.8	61.5	61.2	61.1	61	60.8	60.6	60.4
80	B	2	65.6	68.6	67.6	67.5	67.4	67.3	67.2	67.1	67
81	B	1	65.4	65.3	63.8	63.6	63.5	63.3	63.2	63.1	63

Elyria-Swansea Receivers North of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Modified Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
82	B	2	64.7	62.6	60.8	60.6	60.5	60.4	60.2	60.1	60
83	B	3	63	58.6	56.9	56.7	56.6	56.4	56.3	56.3	56.2
84	B	3	63.7	60.1	58.1	57.9	57.8	57.7	57.5	57.4	57.2
85	B	1	62.1	57	55.6	55.2	55	54.8	54.6	54.5	54.5
86	B	3	63.7	69.2	68.2	68	68	67.9	67.8	67.7	67.7
87	B	3	63.2	64.4	63.1	62.9	62.8	62.6	62.5	62.4	62.3
88	B	2	60.2	59.7	57.9	57.7	57.6	57.6	57.5	57.3	57.3
89	B	3	61.7	61.8	60.1	60	59.9	59.8	59.7	59.6	59.5
90	B	1	59.2	58.1	56.3	56.1	55.9	55.8	55.7	55.6	55.6
91	C	1	63.9	69.3	68.2	68.1	68.1	68	68	68	68
92	C	1	57.7	52.4	51.4	51.3	51.2	51.1	51	50.9	50.8
93	C	1	63.5	64.3	62.4	62.3	62.3	62.2	62.2	62.1	62.1
94	C	1	60.9	55.1	54.4	54.3	54.2	54.1	54	54	53.9
95	B	2	61.6	55	54.2	54.1	54	53.9	53.9	53.8	53.7
96	B	2	62.8	58.7	57.7	57.7	57.6	57.6	57.5	57.5	57.4
97	B	2	64.7	62.1	60.2	60.1	60.1	60	60	59.9	59.9
98	B	2	68.5	70.3	69.7	69.7	69.6	69.6	69.5	69.5	69.5
99	B	2	66.4	63.5	61.9	61.8	61.7	61.6	61.5	61.5	61.4
100	B	2	64.8	59.9	58.5	58.4	58.3	58.2	58.1	58.1	58
101	B	2	63.3	57.3	56.1	56	55.9	55.9	55.8	55.7	55.7
102	B	1	62	56.6	55.4	55.3	55.2	55.1	55.1	55	55
103	B	2	69.4	72.8	71.7	71.6	71.6	71.5	71.4	71.4	71.4
104	B	2	67.3	65.9	63.5	63.4	63.3	63.1	63.1	63	62.9
105	B	2	65.6	61.9	60.4	60.3	60.2	60.1	60.1	60	59.9
106	B	2	64	59.2	58	57.8	57.7	57.6	57.5	57.4	57.4
107	B	1	62.6	56.9	55.5	55.3	55.2	55.1	55	54.9	54.8
108	B	1	61.4	56.6	55	54.8	54.7	54.5	54.4	54.4	54.3
109	B	2	69.9	72.2	71.3	71.2	71.1	71	71	70.9	70.8
110	B	2	67.6	64.4	62.9	62.7	62.5	62.4	62.2	62.1	61.9
111	B	2	64.2	58	56.6	56.3	56.1	56	55.9	55.7	55.6
112	B	2	65.8	61	59.7	59.5	59.4	59.3	59.2	59	59
113	B	2	62.8	56.5	54.8	54.6	54.3	54.2	54.1	53.9	53.8
114	B	2	68.7	67	65.1	64.9	64.7	64.5	64.4	64.2	64.1
115	B	2	66.6	62.7	60.8	60.6	60.4	60.3	60.1	60	59.9
116	B	2	65.1	60.4	57.9	57.7	57.4	57.2	57.1	57	56.8
117	B	2	63.6	57.9	55.9	55.6	55.3	55.1	55	54.8	54.7
118	B	1	62.2	57	54.8	54.5	54.1	54	53.8	53.7	53.5
119	B	2	68.1	68.4	65.3	65	64.8	64.7	64.6	64.4	64.3
120	B	2	66	62.5	60.6	60.4	60.2	60.1	60.1	59.9	59.8
121	B	2	64.5	59.3	57.2	56.9	56.6	56.5	56.4	56.2	56.1
122	B	2	62.9	57.3	55.3	55	54.7	54.5	54.4	54.2	54.1
123	B	1	61.5	56.2	54.5	54.3	53.9	53.7	53.5	53.4	53.2

Elyria-Swansea Receivers North of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Modified Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
124	B	2	67	65.9	63.5	63.2	63.1	63	62.9	62.9	62.8
125	B	2	65.4	61.7	59.1	58.7	58.3	58.1	58.1	58	57.8
126	B	2	63.8	59.3	57.2	56.8	56.2	56	55.9	55.7	55.6
127	B	2	61.5	56.2	54.3	53.9	53.4	53.1	52.8	52.6	52.4
128	B	2	60.5	56	53.4	53	52.4	52.1	52	51.8	51.6
129	B	2	63.6	60.5	57.2	56.6	55.8	55.5	55.3	55.1	54.8
130	B	2	61.8	57.1	54.8	54.2	53.4	53.1	52.8	52.5	52.3
131	B	2	62.4	58.7	55.4	54.9	54.4	54	53.7	53.5	53.3
132	B	3	64.8	63.1	58.8	58.1	57.1	56.6	56.2	55.9	55.6
133	B	2	65.2	65.3	58.6	57.4	56.8	56.4	56	55.7	55.5
134	B	1	62	62.2	57.4	56.3	55.5	54.9	54.5	53.9	53.5
135	B	1	60.1	60.6	56.1	55.7	55.2	55	54.8	54.6	54.5

Elyria-Swansea Receivers South of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 No Action North					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
220	B	3	66.1	70.8	68.3	68.1	68.1	68.1	68.1
221	B	2	63.8	67.5	65.8	65.6	65.6	65.5	65.5
222	B	1	63.7	67.1	65.5	65.3	65.3	65.2	65.2
223	B	3	63.3	66.4	65.2	65	65	64.9	64.9
224	B	2	63.5	69.7	64	63.4	63.4	63.2	63
225	B	2	62.1	69.1	63.8	63.2	63.2	63	62.9
226	B	1	62.3	68	63.6	63	63	62.9	62.8
227	B	2	60.9	66.8	62.3	61.4	61.4	61.2	61
228	B	3	60.9	66.3	62.7	61.9	61.9	61.8	61.7
229	B	3	61.1	65.6	62.6	62	62	61.9	61.8
230	B	2	65.9	68.8	63.2	62.7	62.7	62.5	62.4
231	B	3	62	69.5	63.1	62.3	62.3	62	61.8
232	B	3	60.6	69	62.6	61.8	61.8	61.6	61.4
233	B	3	60.1	68.2	62.2	61.4	61.4	61.2	61
234	B	1	59.1	65.8	61.3	60.5	60.5	60.3	60.2
235	B	2	58.9	65.7	61.3	60.2	60.2	60	59.9
236	B	2	57.9	66.9	60.1	58	58	57.6	57.2
237	B	1	57.4	64.9	59.9	58.7	58.7	58.5	58.3
238	B	1	57.2	65.4	59.4	57.5	57.5	57.2	56.9
239	B	3	58	67.4	60.4	57.4	57.4	56.8	56.4
240	B	1	64.7	70.5	62.6	61.5	61.5	61.1	60.7
241	E	1	62.6	71	62.6	61.2	61.2	60.7	60.3
242	B	2	61.2	70.8	62.4	60.7	60.7	60.2	59.7
243	B	3	58.1	67	60.7	58.3	58.3	57.9	57.5
244	E	1	63.1	71.3	62.3	61.1	61.1	60.6	60.2
245	B	1	60.9	70.2	62.2	60.3	60.3	59.8	59.4
246	B	3	63.3	70.9	61.9	60.7	60.7	60.3	59.8
247	B	2	61.1	70.4	61.8	60.3	60.3	59.9	59.4
248	B	2	60.9	69.7	61.7	60	60	59.4	59
249	C	1	59.8	68	61.4	58.8	58.8	58.3	57.7
250	B	2	67.4	70.4	63.6	62.7	62.7	62.4	62.2
251	B	2	64.9	70	61.4	60	60	59.7	59.4
252	B	2	62.8	68.7	60.8	58.7	58.7	58.2	57.8
253	B	3	60.8	67.3	61.2	59	59	58.5	58.1
254	B	3	68.7	70.5	62	60.7	60.7	60.3	59.9
255	B	3	64.2	69.3	61.2	59.4	59.4	58.9	58.5
256	B	1	62.3	68.1	60.8	58.4	58.4	57.9	57.4
257	B	3	59.9	66	60.3	58.2	58.2	57.8	57.5
258	B	3	68.6	71.4	64.2	63.2	63.2	62.8	62.6

Elyria-Swansea Receivers South of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 No Action North					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
259	B	2	66.5	70.6	63	61.3	61.3	60.9	60.5
260	B	1	63.9	69.1	61.4	59.4	59.4	59	58.7
261	B	1	62.7	68.2	61.4	59.4	59.4	59	58.6
262	B	3	60.7	66.2	59.8	57.5	57.5	57	56.7
263	B	1	71.1	71.3	64.2	63.5	63.5	63.3	63.1
264	B	2	65.3	69.5	61.6	59.8	59.8	59.5	59.3
265	B	3	61.5	67.2	60.6	58.6	58.6	58.3	58
266	B	2	59.8	65	58.9	56.4	56.4	56	55.6
267	B	2	64	68.5	61.7	61	61	60.8	60.6
268	B	2	65.4	68	60.6	59.4	59.4	59.1	58.8
269	B	2	63.2	68	61.2	59.7	59.7	59.4	59.2
270	B	2	61.2	65.5	59.9	58.1	58.1	57.7	57.5
271	B	2	60.2	64.6	59.2	57.2	57.2	56.8	56.5
272	B	2	59.4	63.5	58.8	57	57	56.7	56.5
273	E	1	66	67.6	60.5	59.4	59.4	59.1	58.9
274	B	3	61.4	66	59.8	58.2	58.2	57.9	57.6
275	B	2	60.2	64.8	59.3	57.2	57.2	56.8	56.6
276	B	3	63.7	67.9	64.3	63.5	63.5	63.3	63.2
277	B	2	62.5	67	64.7	64.2	64.2	64.1	64
278	B	2	61.9	66.5	64.5	64.1	64.1	64	63.9
279	B	1	61.1	65.7	63.9	63.5	63.5	63.4	63.4
280	B	3	65.2	70	68.2	67.9	67.9	67.9	67.8
281	B	2	64.1	69	67.4	67.1	67.1	67.1	67
282	B	2	63.4	68.2	66.9	66.6	66.6	66.6	66.6
283	B	1	66.8	72	71.6	71.5	71.5	71.5	71.5
355	B	1	66.2	70.2	67.3	66.5	66.5	66.4	66.4
356	B	4	61.8	66.1	63.8	63.1	63.1	63	62.9
357	B	3	62.9	67.6	64.9	64.2	64.2	64.1	64
358	B	1	66	69.3	64.2	62.3	62.3	62.1	61.9
359	B	3	63	66.9	62.3	60.5	60.5	60.2	60
360	B	1	66.1	69	63.6	61.7	61.7	61.5	61.4
361	B	3	62.9	66.8	62.2	60.4	60.4	60.1	59.9
362	B	1	67.2	68.6	63.3	62.7	62.7	62.5	62.4
363	B	1	66.5	69.2	64	62.7	62.7	62.6	62.5
364	B	3	63.9	67.3	63.1	62.1	62.1	61.9	61.9

Elyria-Swansea Receivers South of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 No Action South					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
220	B	3	66.1	70.8	67	66.8	66.7	66.6	66.6
221	B	2	63.8	68.5	65.9	65.6	65.5	65.5	65.4
222	B	1	63.7	68.2	65.9	65.5	65.5	65.4	65.4
223	B	3	63.3	67.7	65.7	65.4	65.3	65.3	65.3
224	B	2	63.5	69.3	64.8	64.6	64.4	64.3	64.2
225	B	2	62.1	69.7	63.8	63.4	63.1	62.9	62.7
226	B	1	62.3	68.7	63.7	63.3	63	62.9	62.7
227	B	2	60.9	67.4	62.9	62.2	61.9	61.7	61.6
228	B	3	60.9	67.1	62.3	61.4	61.1	60.9	60.8
229	B	3	61.1	66.5	62.6	61.9	61.7	61.6	61.6
230	B	2	65.9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
231	B	3	62	69.3	63.9	63.7	63.3	63.1	62.9
232	B	3	60.6	69.4	63.1	62.6	62.3	62	61.8
233	B	3	60.1	69	62.5	62	61.6	61.4	61.2
234	B	1	59.1	67	62.1	61.3	61	60.9	60.7
235	B	2	58.9	66.8	61.6	60.7	60.4	60.2	60
236	B	2	57.9	67.6	61.1	59.5	59	58.5	58.2
237	B	1	57.4	65.8	60.1	59	58.6	58.4	58.2
238	B	1	57.2	66.4	60.1	58.4	57.9	57.5	57.3
239	B	3	58	68.1	60.9	59	58.3	57.7	57.3
240	B	1	64.7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
241	E	1	62.6	70.6	64	63.6	63.2	62.9	62.7
242	B	2	61.2	71.1	63.2	62.4	61.8	61.4	61
243	B	3	58.1	67.9	61.4	59.5	58.8	58.4	58
244	E	1	63.1	70.3	64.4	64	63.8	63.5	63.4
245	B	1	60.9	70.4	62.8	61.9	61.3	60.9	60.5
246	B	3	63.3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
247	B	2	61.1	70.4	62.8	62.1	61.6	61.2	60.9
248	B	2	60.9	70	62.4	61.5	60.9	60.5	60.1
249	C	1	59.8	68.8	62.4	60.8	60.1	59.6	59.2
250	B	2	67.4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
251	B	2	64.9	70	62.9	62.4	62.1	61.7	61.5
252	B	2	62.8	69	61.7	60.8	60.3	59.9	59.5
253	B	3	60.8	68.4	62.1	60.6	60	59.6	59.3
254	B	3	68.7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
255	B	3	64.2	69.4	62.1	61.4	60.9	60.6	60.2
256	B	1	62.3	68.3	61.2	60.3	59.8	59.3	59
257	B	3	59.9	67.4	61.1	59.9	59.4	59	58.7
258	B	3	68.6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Elyria-Swansea Receivers South of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 No Action South					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
259	B	2	66.5	70.2	64	63.6	63.3	63	62.8
260	B	1	63.9	69.3	63	62.1	61.7	61.3	61
261	B	1	62.7	68.5	62.2	61	60.5	60.2	59.9
262	B	3	60.7	66.6	60.4	59.1	58.6	58.2	57.9
263	B	1	71.1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
264	B	2	65.3	69.6	63.4	62.8	62.5	62.3	62.1
265	B	3	61.5	67.4	61.4	60.4	59.9	59.6	59.3
266	B	2	59.8	66	59.7	58.1	57.5	57.1	56.8
267	B	2	64	70.2	67	66.9	66.8	66.7	66.7
268	B	2	65.4	69.7	64.6	64	63.9	63.7	63.6
269	B	2	63.2	68.3	63.1	62.2	61.8	61.5	61.3
270	B	2	61.2	66.1	61.2	60.1	59.7	59.4	59.2
271	B	2	60.2	65.5	60.2	58.9	58.5	58.2	58
272	B	2	59.4	65.1	59.9	58.8	58.4	58.2	58
273	E	1	66	70.1	64.6	64.2	64.1	63.9	63.8
274	B	3	61.4	66.6	61.6	60.5	60.2	59.9	59.7
275	B	2	60.2	65.8	60.3	59	58.6	58.3	58.1
276	B	3	63.7	68.3	65.2	64.7	64.5	64.4	64.3
277	B	2	62.5	67.7	65.1	64.7	64.6	64.5	64.4
278	B	2	61.9	67.1	64.8	64.4	64.3	64.2	64.2
279	B	1	61.1	66.4	64.2	63.8	63.7	63.6	63.6
280	B	3	65.2	70.3	68.5	68.3	68.2	68.1	68.1
281	B	2	64.1	69.3	67.5	67.3	67.2	67.2	67.1
282	B	2	63.4	68.5	67	66.8	66.7	66.7	66.6
283	B	1	66.8	72.1	71.6	71.6	71.6	71.5	71.5
355	B	1	66.2	70.6	67.4	66.9	66.7	66.6	66.5
356	B	4	61.8	66.4	63.6	63.2	63	62.9	62.8
357	B	3	62.9	68	65.2	64.7	64.5	64.4	64.3
358	B	1	66	69.4	64.5	63	62.5	62.1	61.8
359	B	3	63	66.7	61.8	60.4	59.9	59.6	59.4
360	B	1	66.1	69.2	63.9	62.2	61.7	61.2	60.9
361	B	3	62.9	66.6	61.6	60.3	59.8	59.5	59.2
362	B	1	67.2	67.9	61.7	61.2	60.8	60.5	60.3
363	B	1	66.5	69	63.6	62.1	61.7	61.3	61.1
364	B	3	63.9	67.8	62.1	61.2	60.7	60.5	60.4

Elyria-Swansea Receivers South of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 Revised Viaduct North					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
220	B	3	66.1	71.3	68.2	68.1	68	67.9	67.9
221	B	2	63.8	68.7	66.3	66.1	66	66	65.9
222	B	1	63.7	68.4	66	65.8	65.7	65.7	65.6
223	B	3	63.3	67.8	65.7	65.5	65.4	65.4	65.3
224	B	2	63.5	70.6	66	65.7	65.4	65.3	65.1
225	B	2	62.1	70.5	65.1	64.7	64.4	64.2	64
226	B	1	62.3	69.7	64.6	64.2	64	63.8	63.7
227	B	2	60.9	68.6	63.5	62.9	62.6	62.3	62.2
228	B	3	60.9	68.4	63.8	63.2	62.9	62.7	62.6
229	B	3	61.1	67.7	63.6	62.9	62.7	62.6	62.4
230	B	2	65.9	71.3	68.7	68.6	68.5	68.5	68.4
231	B	3	62	70.5	65.2	64.8	64.6	64.3	64.2
232	B	3	60.6	70.4	64.3	63.8	63.5	63.2	63
233	B	3	60.1	69.9	63.7	63.2	62.9	62.6	62.4
234	B	1	59.1	67.9	62.8	62.3	62	61.8	61.7
235	B	2	58.9	68	62.7	62	61.6	61.4	61.3
236	B	2	57.9	69.1	62.1	61	60.4	59.9	59.5
237	B	1	57.4	67.2	61.4	60.6	60.2	60	59.8
238	B	1	57.2	68	61.6	60.2	59.7	59.3	59.1
239	B	3	58	69.7	62.9	61	60.3	59.7	59.2
240	B	1	64.7	72.9	67.9	67.6	67.4	67.3	67.1
241	E	1	62.6	72.6	66.3	65.8	65.4	65.1	64.8
242	B	2	61.2	72.4	65.3	64.5	63.9	63.4	63
243	B	3	58.1	69.7	63.2	61.5	60.9	60.4	60
244	E	1	63.1	72.3	66.5	66.1	65.8	65.5	65.3
245	B	1	60.9	71.8	64.8	63.8	63.1	62.6	62.2
246	B	3	63.3	71.9	66.2	65.8	65.5	65.2	65
247	B	2	61.1	71.9	64.8	64	63.6	63.1	62.8
248	B	2	60.9	71.4	64.4	63.4	62.8	62.3	61.9
249	C	1	59.8	70.9	64.1	62.4	61.7	61.2	60.8
250	B	2	67.4	73.2	69.4	69.3	69.1	69.1	69
251	B	2	64.9	70.7	64.5	64.1	63.8	63.7	63.5
252	B	2	62.8	70.1	63.3	62.5	62.1	61.8	61.6
253	B	3	60.8	70	63.6	62.2	61.6	61.3	61
254	B	3	68.7	71.6	66.4	66.1	65.9	65.8	65.7
255	B	3	64.2	70.6	64.1	63.4	63.1	62.9	62.7
256	B	1	62.3	69.5	62.8	62	61.6	61.4	61.1
257	B	3	59.9	68.5	62.3	61.1	60.7	60.4	60.1
258	B	3	68.6	72.3	69.2	69	69	68.9	68.8

Elyria-Swansea Receivers South of I-70									
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))						
			Existing	2035 Revised Viaduct North					
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls
259	B	2	66.5	71.1	66.9	66.7	66.5	66.4	66.3
260	B	1	63.9	69.9	64.4	63.9	63.7	63.5	63.3
261	B	1	62.7	69.7	63.5	62.7	62.4	62.2	62
262	B	3	60.7	67.9	61.7	60.8	60.4	60.1	60
263	B	1	71.1	73	70.7	70.6	70.6	70.5	70.5
264	B	2	65.3	70.4	65.5	65.2	65	64.9	64.8
265	B	3	61.5	68.6	62.5	61.6	61.3	61.1	60.9
266	B	2	59.8	67.1	60.7	59.6	59.2	59	58.8
267	B	2	64	71.7	69.4	69.2	69.2	69.1	69.1
268	B	2	65.4	70.7	66.2	66	65.9	65.8	65.7
269	B	2	63.2	69.2	63.6	63.1	62.9	62.7	62.5
270	B	2	61.2	66.4	61.5	60.7	60.4	60.2	60
271	B	2	60.2	66.3	60.6	59.7	59.4	59.2	59
272	B	2	59.4	65.5	60.4	59.3	59	58.8	58.6
273	E	1	66	71.9	69.6	69.4	69.4	69.3	69.3
274	B	3	61.4	67.4	62.1	61.2	60.9	60.7	60.5
275	B	2	60.2	66.6	61	60.1	59.8	59.6	59.4
276	B	3	63.7	67.9	64	63.7	63.5	63.4	63.3
277	B	2	62.5	66.4	62.6	62	61.8	61.6	61.5
278	B	2	61.9	65.7	61.4	60.8	60.6	60.4	60.3
279	B	1	61.1	65	60.7	59.9	59.7	59.5	59.4
280	B	3	65.2	68.6	65.4	65.2	65.1	65	64.9
281	B	2	64.1	67.4	64.1	63.9	63.8	63.7	63.6
282	B	2	63.4	65.6	61.9	61.4	61.2	61.1	61
283	B	1	66.8	65.2	61.2	60.5	60.3	60.2	60.1
355	B	1	66.2	69.7	66.2	66	65.9	65.8	65.7
356	B	4	61.8	65.9	62.4	62.2	62	61.9	61.8
357	B	3	62.9	67.2	63.5	63.2	63.1	62.9	62.9
358	B	1	66	69.1	65.2	65	64.8	64.6	64.5
359	B	3	63	66.7	62.5	62.2	62	61.8	61.7
360	B	1	66.1	68.9	65.1	64.8	64.6	64.5	64.4
361	B	3	62.9	66.2	62.3	62.1	61.9	61.8	61.7
362	B	1	67.2	70	67	66.8	66.7	66.6	66.5
363	B	1	66.5	69.1	65.7	65.5	65.3	65.2	65.1
364	B	3	63.9	67.1	63.4	62.9	62.7	62.6	62.5

Elyria-Swansea Receivers South of I-70							
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))				
			Existing	2035 Revised Viaduct South			
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls
220	B	3	66.1	72.7	69.4	69.2	69.1
221	B	2	63.8	70.6	67.4	67.2	67.1
222	B	1	63.7	70	66.6	66.4	66.3
223	B	3	63.3	68.8	65.7	65.4	65.4
224	B	2	63.5	#N/A	#N/A	#N/A	#N/A
225	B	2	62.1	71.9	66.5	66.2	66
226	B	1	62.3	71.7	65.6	65.1	64.8
227	B	2	60.9	70.5	64.4	63.9	63.5
228	B	3	60.9	69.9	63.8	62.9	62.5
229	B	3	61.1	69	62.7	61.9	61.5
230	B	2	65.9	#N/A	#N/A	#N/A	#N/A
231	B	3	62	#N/A	#N/A	#N/A	#N/A
232	B	3	60.6	71.4	65.9	65.5	65.2
233	B	3	60.1	71.6	65.5	65	64.7
234	B	1	59.1	70	64.9	64.5	64.3
235	B	2	58.9	69.9	64.3	63.7	63.4
236	B	2	57.9	71	63.7	63	62.5
237	B	1	57.4	69.2	63.2	62.8	62.4
238	B	1	57.2	70	63	62	61.5
239	B	3	58	71.5	64.3	63	62.4
240	B	1	64.7	#N/A	#N/A	#N/A	#N/A
241	E	1	62.6	#N/A	#N/A	#N/A	#N/A
242	B	2	61.2	73.4	67.2	66.9	66.6
243	B	3	58.1	71.7	64.6	63.4	62.9
244	E	1	63.1	#N/A	#N/A	#N/A	#N/A
245	B	1	60.9	73.7	67.1	66.7	66.4
246	B	3	63.3	#N/A	#N/A	#N/A	#N/A
247	B	2	61.1	72.8	69.1	68.9	68.8
248	B	2	60.9	73.3	67.1	66.7	66.4
249	C	1	59.8	72.1	65.8	64.8	64.3
250	B	2	67.4	#N/A	#N/A	#N/A	#N/A
251	B	2	64.9	73.6	70.4	70.3	70.2
252	B	2	62.8	71.9	66.7	66.3	66.1
253	B	3	60.8	71.3	65.4	64.4	63.9
254	B	3	68.7	#N/A	#N/A	#N/A	#N/A
255	B	3	64.2	72.7	66.6	66.2	65.9
256	B	1	62.3	71.5	65	64.4	64
257	B	3	59.9	70.2	64.3	63.3	62.9
258	B	3	68.6	#N/A	#N/A	#N/A	#N/A

Elyria-Swansea Receivers South of I-70							
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))				
			Existing	2035 Revised Viaduct South			
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls
259	B	2	66.5	73.9	68.3	68.1	67.9
260	B	1	63.9	71.8	65.3	64.7	64.3
261	B	1	62.7	71	64.8	63.9	63.4
262	B	3	60.7	68.9	62.7	61.6	61.1
263	B	1	71.1	#N/A	#N/A	#N/A	#N/A
264	B	2	65.3	72.5	66.1	65.6	65.4
265	B	3	61.5	69.9	63.8	62.8	62.4
266	B	2	59.8	68.5	62.3	61	60.4
267	B	2	64	#N/A	#N/A	#N/A	#N/A
268	B	2	65.4	72	68.5	68.4	68.2
269	B	2	63.2	70.2	65	64.4	64
270	B	2	61.2	67.6	62.6	61.9	61.6
271	B	2	60.2	67.2	61.9	60.9	60.6
272	B	2	59.4	67.1	61.5	60.6	60.3
273	E	1	66	73.5	71.7	71.6	71.5
274	B	3	61.4	68.8	63.4	62.8	62.5
275	B	2	60.2	67.6	61.8	61.1	60.7
276	B	3	63.7	69.5	65.6	65.3	65.2
277	B	2	62.5	67.9	64.2	64	63.8
278	B	2	61.9	67	63	62.3	62.1
279	B	1	61.1	66.3	62	61.3	61
280	B	3	65.2	71.5	69.5	69.4	69.3
281	B	2	64.1	69.1	66.4	66.2	66.1
282	B	2	63.4	67.7	64.4	63.9	63.8
283	B	1	66.8	66.9	63.4	62.9	62.7
355	B	1	66.2	70.7	67.2	67	66.9
356	B	4	61.8	67.8	64	63.8	63.6
357	B	3	62.9	69	64.9	64.7	64.5
358	B	1	66	70.3	66.7	66.5	66.3
359	B	3	63	68.2	63.4	63.1	62.9
360	B	1	66.1	70.1	66.6	66.4	66.3
361	B	3	62.9	68.2	63.3	63	62.8
362	B	1	67.2	70.2	69.2	69.2	69.2
363	B	1	66.5	70.3	67.1	66.9	66.8
364	B	3	63.9	68.8	65.1	64.9	64.8

Elyria-Swansea Receivers South of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Basic Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
146	B	1	60.9	59.5	58	57.8	57.7	57.6	57.5	57.5	57.4
147	B	2	64.7	62.1	61.5	61.4	61.4	61.3	61.3	61.3	61.3
148	B	2	61.7	60.3	59.4	59.3	59.2	59.1	59.1	59	58.9
149	B	2	61.8	60.9	59.4	59.2	59.1	59	58.9	58.8	58.8
150	B	2	61.4	58.6	56.9	56.3	55.8	55.4	55.2	54.9	54.8
151	B	2	61.7	59.2	57.5	57.3	57.1	57	56.9	56.8	56.7
152	B	2	65.3	64.5	64	64	63.9	63.9	63.9	63.9	63.9
153	B	2	62.6	61.6	60.9	60.9	60.8	60.7	60.6	60.5	60.4
154	C	1	60	57.4	55.3	55	54.7	54.5	54.4	54.3	54.2
155	C	1	60.9	59.5	57.1	56.9	56.6	56.4	56.2	56.1	56
156	C	1	61.5	60.5	58.3	58.2	57.9	57.7	57.6	57.5	57.4
157	C	1	60.9	59.5	57.6	57.3	57.1	56.9	56.7	56.6	56.5
158	B	1	62.7	62	60.5	60.4	60.2	60.1	60	59.9	59.9
159	B	1	65.5	57.6	55.5	55.5	55.3	55.2	55.2	55.1	55.1
160	B	2	62.6	59.8	58.3	57.7	57.2	56.8	56.5	56.3	56.1
161	B	1	65.9	59.5	58.3	58.3	58.2	58.2	58.1	58.1	58.1
162	B	1	63.1	60.9	58.4	58.1	57.8	57.6	57.4	57.2	57.1
163	B	2	62.9	60.5	58.2	57.8	57.6	57.5	57.3	57.2	57.1
164	B	2	65.9	67.9	67.7	67.7	67.6	67.6	67.6	67.6	67.6
165	B	2	63.5	63.3	62.6	62.6	62.5	62.3	62.3	62.2	62.1
166	B	2	62.7	60.8	58.2	57.6	57.1	56.8	56.5	56.3	56.1
167	B	3	59.6	56.8	54.4	54.3	54.2	54	53.9	53.8	53.8
168	B	3	65.7	58.1	56	55.9	55.8	55.7	55.6	55.6	55.5
169	B	3	63.8	63.4	61.9	61.7	61.5	61.3	61.2	61.1	61.1
170	B	2	66.2	59.8	58.5	58.5	58.4	58.4	58.3	58.3	58.3
171	B	2	61	58.3	56.4	56.3	56.1	56	56	55.9	55.9
172	B	2	62.2	61	58.8	58.5	58.2	58.1	58	57.9	57.8
173	B	2	63.2	61.9	59.1	58.6	58.1	57.7	57.4	57.2	57
174	B	2	60.2	57.8	55.7	55.6	55.4	55.3	55.3	55.2	55.2
175	B	2	60.5	58.2	56.1	56	55.8	55.7	55.6	55.5	55.4
176	B	2	64.2	61.8	59.3	58.9	58.6	58.4	58.2	58	57.9
177	B	2	64.5	62.3	59.8	59.4	59.1	58.9	58.6	58.4	58.3
178	B	2	65.1	61.7	60	59.8	59.7	59.6	59.5	59.4	59.3
179	B	2	64.6	65.1	63.7	63.4	63.2	63.1	63	62.9	62.8
180	B	2	64	60.7	59.5	59.5	59.1	58.5	58.2	57.9	57.6
181	B	2	66.9	71	70.9	70.9	70.9	70.8	70.8	70.8	70.8
182	B	2	64.6	65.6	64.3	64	63.9	63.8	63.7	63.6	63.6
183	B	2	63.8	62.6	60	59.3	58.8	58.4	58.1	57.8	57.6
184	B	2	63.5	62.1	59.2	58.7	58.1	57.6	57.3	57.1	56.8

Elyria-Swansea Receivers South of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Basic Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
185	B	2	62.8	60.1	57.6	57.2	56.8	56.5	56.3	56.1	55.9
186	B	2	60.2	57.6	55.8	55.6	55.5	55.3	55.2	55.1	55.1
187	B	1	60.2	57.7	55.8	55.7	55.6	55.5	55.4	55.4	55.3
188	B	2	65.8	57.8	56	55.9	55.8	55.7	55.6	55.6	55.5
189	B	1	65.9	64.8	61.8	61.2	60.7	60.2	59.9	59.5	59.3
190	B	1	66.5	66.3	63.3	62.6	62.1	61.7	61.3	61.1	60.9
191	B	1	64	61.9	59.1	58.7	58.4	58.1	57.9	57.7	57.5
192	B	1	66.7	64.1	62.2	62	61.8	61.6	61.5	61.4	61.3
193	B	1	63.5	62.4	59.8	59.5	59.3	59	58.8	58.7	58.6
194	B	1	65.8	60.8	58.4	58.3	58.1	58	58	57.9	57.9
195	B	2	61.3	61.2	58.4	58.2	58.1	58	57.9	57.8	57.7
196	B	1	61.9	60.5	58.5	58.4	58.2	58.1	58	58	57.9
197	B	1	61.5	60.4	58.6	58.5	58.3	58.2	58.1	58.1	58
198	E	1	66.4	66.7	62.6	61.6	60.9	60.2	59.7	59.3	59
199	B	2	66	65.2	61.7	60.6	59.8	59.2	58.7	58.3	57.9
200	B	3	66.7	65.2	61.6	61.1	60.6	60.2	59.9	59.6	59.4
201	B	3	65.8	65	61.7	60.9	60.1	59.6	59.2	58.9	58.5
202	B	2	65.4	64.4	61.5	60.7	60.1	59.5	59.2	58.9	58.7
203	B	3	62.6	61.3	59.4	59.2	59.1	59	58.9	58.9	58.8
204	B	1	67.1	63.1	61	60.9	60.8	60.8	60.7	60.7	60.7
205	B	2	62.1	61.9	60.3	60.1	59.9	59.9	59.8	59.7	59.7
206	B	2	65.7	64.3	61.1	60.8	60.4	60.2	60	59.8	59.7
207	B	3	64.8	64.9	62.2	61.9	61.7	61.5	61.3	61.2	61.1
208	B	4	66.1	62.9	60.2	60.1	59.9	59.9	59.8	59.7	59.7
209	B	3	62	63.2	60.7	60.5	60.4	60.3	60.3	60.2	60.1
210	B	1	61.7	61.8	60.6	60.5	60.4	60.3	60.3	60.2	60.2
211	E	1	68.6	66.3	65.6	65.5	65.4	65.3	65.3	65.2	65.2
212	B	1	67.6	66.5	63.3	62.9	62.6	62.3	62.1	62	61.8
213	B	2	63.2	63.3	61.8	61.7	61.6	61.5	61.5	61.4	61.4
214	B	2	66.5	66.6	62.5	61.5	60.6	59.8	59.3	58.7	58.3
215	B	2	67.8	65.6	63.3	63.1	63	63	62.9	62.9	62.8
216	B	2	65.9	67	64.4	64.1	63.9	63.8	63.7	63.6	63.5
217	B	5	67.8	67.6	64.8	64.1	63.5	63.1	62.8	62.5	62.3
218	B	2	67.8	67.3	63.8	63.4	63.1	62.9	62.7	62.6	62.4
219	B	3	62.9	65	63.3	63.1	63	63	62.9	62.8	62.7
220	B	4	66.7	65.6	63.4	63.2	63.1	63	62.9	62.8	62.8
221	B	1	63.4	65.8	64.9	64.8	64.8	64.8	64.7	64.7	64.7
222	B	4	67.3	68.9	66.2	66	65.8	65.6	65.5	65.4	65.4
223	B	1	71.2	71.2	68.6	68	67.4	67.1	66.9	66.8	66.7
224	E	3	68.4	68.2	66.5	66.4	66.3	66.3	66.3	66.2	66.2
225	B	2	70	70	66.6	66.3	66.1	65.9	65.8	65.7	65.6
226	B	1	64.7	66.7	66.3	66.3	66.3	66.3	66.2	66.2	66.2

Elyria-Swansea Receivers South of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Basic Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
227	B	2	68.5	71.8	68.7	68	67.5	67.2	67	66.9	66.8
228	E	1	64.6	66.8	66.3	66.3	66.3	66.3	66.3	66.3	66.3
229	B	4	65.2	70	69.3	69.2	69.2	69.1	69.1	69.1	69.1
230	E	1	67.6	70.9	69.1	69	68.9	68.9	68.8	68.8	68.7
231	B	1	67.1	75	71.7	71.5	71.3	71.2	71.1	71.1	71
232	E	1	66.4	68.9	68.7	68.6	68.6	68.6	68.6	68.6	68.6
233	B	3	66.3	68.4	67.3	67.1	67	66.9	66.8	66.8	66.7

Elyria-Swansea Receivers South of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Modified Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
136	B	2	66.2	60.6	59.8	59.7	59.7	59.7	59.7	59.6	59.6
137	B	1	65.9	60.2	59.5	59.4	59.4	59.4	59.4	59.3	59.3
138	B	1	67.1	63.9	63.1	63	63	63	62.9	62.9	62.9
139	B	2	67.8	66.2	65.5	65.4	65.3	65.3	65.3	65.3	65.2
140	E	1	68.4	69.2	68.6	68.5	68.5	68.4	68.4	68.4	68.3
141	B	2	65.4	57	55.2	55.1	55	54.9	54.8	54.8	54.8
142	B	2	65.5	57.5	55.6	55.5	55.4	55.3	55.2	55.2	55.2
143	B	2	65.7	58.2	56.3	56.2	56.1	56	55.9	55.9	55.9
144	B	2	65.8	57.7	56.3	56.2	56.1	56	56	55.9	55.9
145	B	1	65.8	60.3	58.3	58.2	58	58	57.9	57.9	57.8
146	B	4	66.1	62	60.5	60.4	60.3	60.2	60.2	60.1	60
147	B	4	66.7	64.9	63.8	63.7	63.6	63.5	63.5	63.4	63.4
148	E	1	67.6	71.6	70.9	70.8	70.8	70.7	70.7	70.7	70.6
149	B	2	61	58.2	56.8	56.7	56.6	56.5	56.5	56.4	56.4
150	B	3	62	63	61.5	61.4	61.3	61.2	61.2	61.1	61
151	B	3	62.9	65.4	64.3	64.2	64.1	64.1	64	63.9	63.9
152	B	3	66.3	71.6	71.1	71.1	71	71	71	71	70.9
153	B	2	61.3	60.6	58.8	58.8	58.6	58.6	58.5	58.5	58.4
154	B	2	60.2	58.1	56.6	56.5	56.4	56.4	56.3	56.3	56.3
155	B	3	59.6	56.7	55	54.9	54.8	54.7	54.6	54.6	54.6
156	B	1	60.2	57.6	56	56	55.9	55.8	55.7	55.7	55.6
157	B	2	60.2	57.3	55.9	55.8	55.7	55.6	55.5	55.4	55.4
158	E	1	64.5	66.5	66.3	66.3	66.3	66.3	66.2	66.2	66.2
159	B	2	60.5	57.7	56.2	56.2	56.1	56	55.9	55.8	55.8
160	B	1	61.5	59.9	58.8	58.8	58.7	58.6	58.5	58.5	58.4
161	B	1	61.7	61.6	60.7	60.6	60.5	60.5	60.4	60.4	60.4
162	B	1	64.8	66.2	65.9	65.9	65.8	65.8	65.8	65.8	65.8
163	E	1	66.4	69.6	69.5	69.5	69.5	69.5	69.5	69.4	69.4
164	B	1	61.8	60.2	58.9	58.8	58.7	58.6	58.5	58.5	58.4
165	B	2	62.1	61.6	60.7	60.7	60.6	60.5	60.5	60.4	60.4
166	B	1	63.4	65.3	64.7	64.7	64.7	64.6	64.6	64.6	64.6
167	C	1	60	56.8	55.2	55.1	55	54.8	54.7	54.6	54.5
168	C	1	60.9	59	57.3	57.2	57.1	56.9	56.9	56.8	56.7
169	B	3	62.6	61.5	60.6	60.6	60.5	60.4	60.4	60.4	60.3
170	B	2	63.2	64	63.5	63.5	63.5	63.4	63.4	63.4	63.3
171	B	2	65.2	71.3	70.9	70.9	70.9	70.8	70.8	70.8	70.8
172	B	2	64.2	66.6	66.3	66.3	66.3	66.2	66.2	66.2	66.2
173	C	1	61.5	60.3	58.9	58.8	58.7	58.6	58.5	58.4	58.4
174	C	1	60.9	59.5	58.2	58.1	58.1	57.9	57.9	57.8	57.7

Elyria-Swansea Receivers South of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Modified Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
175	B	1	63.5	62.1	60.3	60.2	60.1	59.9	59.8	59.7	59.7
176	B	3	64.8	64.5	63.3	63.2	63.1	63	62.9	62.8	62.8
177	B	2	65.9	66.7	65.8	65.7	65.6	65.5	65.4	65.4	65.3
178	B	2	62.2	60.5	58.8	58.6	58.5	58.4	58.3	58.2	58.1
179	B	4	67.3	68.6	67.5	67.4	67.3	67.2	67.2	67.1	67.1
180	B	1	67.2	74.6	73.3	73.2	73.1	73.1	73	73	73
181	B	1	64	61.1	59.1	58.9	58.8	58.5	58.4	58.3	58.2
182	B	1	61.5	57.7	55.9	55.8	55.6	55.4	55.3	55.1	55.1
183	B	2	65.7	63.6	61.5	61.3	61.2	61	60.8	60.7	60.6
184	B	2	67.8	66.2	64.3	64.1	63.9	63.7	63.6	63.5	63.4
185	B	2	62.8	58.9	57.1	57	56.9	56.6	56.5	56.3	56.2
186	B	2	70	68.7	66.9	66.6	66.4	66.2	66.1	66	65.9
187	B	1	62.1	58.2	56.5	56.2	56	55.7	55.6	55.4	55.3
188	B	2	65.4	63.3	60.9	60.7	60.4	60.1	60	59.8	59.7
189	B	2	63.2	60.5	58.7	58.5	58.3	58	57.8	57.7	57.6
190	B	5	67.8	66.3	64.1	63.8	63.5	63.1	62.9	62.7	62.5
191	B	2	68.5	71.1	68.5	68.2	67.8	67.6	67.4	67.3	67.2
192	B	1	62.2	57.4	55.7	55.4	55.3	55	54.8	54.7	54.5
193	B	3	65.8	64.1	62.5	62.3	62.3	62.2	62.2	62.1	62
194	B	2	63.5	60.7	59.1	58.9	58.8	58.5	58.4	58.3	58.2
195	B	1	71.2	70.8	68.5	68.1	67.6	67.4	67.2	67.1	67
196	B	2	66.5	64.2	61.3	60.9	60.6	60.3	60	59.8	59.6
197	B	2	66	61.6	59.3	58.9	58.7	58.3	58	57.8	57.5
198	B	2	62.7	57.3	55.5	55.3	55	54.6	54.4	54.3	54.1
199	B	2	63.8	59.5	57.3	57	56.7	56.4	56.1	55.9	55.7
200	B	2	62.7	57.4	55.2	55	54.8	54.5	54.3	54.1	54
201	B	2	63.9	58	56.3	55.9	55.7	55.5	55.3	55.1	54.9
202	E	1	66.4	63	59.8	59.3	58.7	58.4	58.1	57.8	57.5
203	B	2	62.6	58.9	57.3	57.2	57	56.9	56.8	56.8	56.7
204	B	2	63.5	60.5	59.1	59	58.9	58.8	58.8	58.7	58.7
205	B	2	64.6	62.5	60.6	60.4	60.1	60	59.9	59.8	59.7
206	B	2	65.2	62.2	61.2	61.1	61.1	61.1	61	61	61
207	B	2	65.8	65.5	64.9	64.8	64.8	64.8	64.7	64.7	64.7
208	B	2	66.9	67.7	67	66.9	66.9	66.8	66.8	66.8	66.8
209	B	2	64.6	61.9	60.3	60.1	59.8	59.6	59.5	59.4	59.3
210	B	2	61.8	58	56.5	56.4	56.2	56	55.9	55.8	55.8
211	B	1	62.7	59.1	57.7	57.5	57.4	57.1	57	57	56.9
212	B	3	63.8	60.6	59	58.8	58.5	58.3	58.2	58.1	58
213	B	1	66.5	63	60.4	60.1	59.6	59.2	59	58.9	58.7
214	B	2	62.9	57.7	56.7	56.6	56.5	56.3	56.2	56.2	56.1
215	B	2	64.2	59.4	57.9	57.7	57.6	57.5	57.4	57.3	57.2
216	B	1	65.9	61.8	59.6	59.4	59.1	58.9	58.7	58.6	58.5

Elyria-Swansea Receivers South of I-70											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 Partial Cover Lowered – Modified Option							
				No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
217	B	1	63.1	57.5	56.3	56.2	56	55.9	55.7	55.7	55.6
218	B	2	64.5	59.2	58.2	58	57.9	57.7	57.6	57.5	57.5
219	B	3	66.7	62.6	60.3	60.2	59.9	59.7	59.6	59.4	59.3
220	B	2	65	60.1	59.4	59.4	59.3	59.2	59.2	59.1	59.1
221	B	2	63.6	59.6	58.7	58.6	58.6	58.5	58.5	58.5	58.4
222	B	1	67.6	65.2	63	62.9	62.8	62.7	62.5	62.4	62.4
223	B	1	66.7	61.9	60.9	60.8	60.8	60.7	60.6	60.5	60.4
224	E	1	68.6	65.4	64.3	64.3	64.2	64.2	64.1	64	64

Northfield Stapleton						
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))			
			Existing	2035 No Action	2035 General Purpose	2035 Managed Lanes
284	E	1	59	61.8	62.4	62.7
285	E	1	61.8	64.5	65.3	65.2
286	E	1	60.5	63.4	65.4	65.9
287	E	1	62.4	63.5	66.7	66.9
288	E	1	64.9	66.3	69.4	69.9
289	E	1	64	65.6	68.6	69.1

Peoria												
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))									
			Existing	2035 No Action	2035 General-Purpose Lanes							
					No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
290	C	1	61	61.9	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1
291	E	11	60.9	63	62.7	62.7	62.7	62.7	62.7	62.7	62.6	62.6
292	E	11	63.7	65.8	66	66	66	66	66	66	66	66
293	E	8	60.6	61.5	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1
294	E	8	64.5	65.4	68.2	68.2	68.2	68.2	68.2	68.2	68.2	68.2
295	E	8	62.1	62.9	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7
296	E	8	66.1	66.9	69.7	69.7	69.7	69.7	69.7	69.7	69.7	69.7
297	E	9	62.8	65.2	64.1	64.1	64.1	64.1	64.1	64.1	64	64
298	E	9	65.5	68.1	67.8	67.7	67.7	67.7	67.7	67.7	67.7	67.7
299	E	6	61.7	64.1	63.3	63.3	63.3	63.3	63.3	63.3	63.3	63.3
300	E	6	64.4	66.9	66.6	66.5	66.5	66.5	66.5	66.5	66.5	66.5
301	E	7	64.6	65.4	67.6	67.6	67.6	67.6	67.6	67.6	67.6	67.6
302	E	7	67.2	68	70.5	70.5	70.5	70.5	70.5	70.5	70.5	70.5
303	E	1	68.7	70.8	71.7	70.2	69.6	68.7	68.1	67.8	67.5	67.4

Peoria												
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))									
			Existing	2035 No Action	2035 Managed Lanes							
					No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
290	C	1	61	61.9	65.2	65.2	65.2	65.2	65.2	65.2	65.2	65.2
291	E	11	60.9	63	62.7	62.7	62.7	62.7	62.7	62.7	62.7	62.6
292	E	11	63.7	65.8	65.8	65.8	65.8	65.8	65.8	65.8	65.8	65.8
293	E	8	60.6	61.5	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4
294	E	8	64.5	65.4	67.9	67.9	67.9	67.9	67.9	67.9	67.9	67.9
295	E	8	62.1	62.9	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.7
296	E	8	66.1	66.9	69.2	69.2	69.2	69.2	69.2	69.2	69.2	69.2
297	E	9	62.8	65.2	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1
298	E	9	65.5	68.1	67.5	67.5	67.5	67.5	67.5	67.5	67.4	67.4
299	E	6	61.7	64.1	63.3	63.2	63.2	63.2	63.2	63.2	63.2	63.2
300	E	6	64.4	66.9	66.7	66.7	66.7	66.7	66.7	66.7	66.7	66.6
301	E	7	64.6	65.4	67.1	67.1	67.1	67.1	67.1	67.1	67.1	67.1
302	E	7	67.2	68	70	70	70	70	70	70	70	70
303	E	1	68.7	70.8	71.1	69.9	69.3	68.7	68.2	67.8	67.5	67.3

Montbello											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 No Action	2035 General-Purpose Lanes						
					No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
304	B	4	57.3	58.7	61.4	60	59	58.7	58.4	58.1	57.9
305	B	2	57.3	58.9	61.7	60.2	59.3	58.9	58.7	58.4	58.2
306	B	3	57.9	59.7	62.3	60.7	59.6	59.2	58.8	58.5	58.2
307	B	3	58.6	60.5	62.9	61.4	60.1	59.6	59.2	58.9	58.5
308	B	3	59.2	61.4	63.6	61.9	60.4	59.8	59.4	59	58.7
309	B	2	57.9	59.8	61.9	60.7	59.6	59.2	58.6	58	57.7
310	B	2	58	60	61.9	60.7	59.6	59.2	58.5	58	57.6
311	B	3	59.8	62.1	64.5	62.8	61.3	60.5	60.1	59.7	59.3
312	B	5	60.4	62.7	65.8	62.8	61.8	61.1	60.4	60	59.7
313	B	2	58.8	60.7	62.8	61.3	60.2	59.9	59.2	58.4	58
314	B	3	58.6	60.5	62.6	61.1	60.1	59.8	59.2	58.3	57.9
315	B	2	59.2	61.3	63.6	61.8	61.1	60.6	60	59.2	58.4
316	B	3	59.8	61.7	64.2	62.3	61.4	61	60.3	59.1	58.7
317	B	2	59.6	61.6	64	62.2	61.4	60.9	60.4	59.4	58.6
318	B	2	61.3	63.4	66.3	64.5	63	61.8	61.2	60.5	59.9
319	B	2	60.8	63	69	64.1	62.7	62	61.4	61	60.5
320	B	3	61.5	63.8	68.9	64.3	63.1	61.8	61.3	60.7	60.3
321	B	2	59.8	61.8	64.5	62.5	61.7	61.2	60.7	60.1	59.3
322	B	2	61.2	63	66	63.6	62.6	62.1	61.4	60.4	59.6
323	B	3	61.9	64.1	69.6	64.6	63.2	62.2	61.7	61.1	60.7
324	B	2	60	62.1	64.9	63.1	62.5	62	61.6	61	60.2
325	B	3	60.6	62.7	65.5	63.1	62.3	61.7	61.2	60.6	59.8
326	B	3	62.8	64.9	69.8	65.8	64	63	62.3	61.6	61.1
327	B	3	63.3	65.4	70	65.7	64.2	63.3	62.5	61.8	61.2
328	B	2	61.2	63	65.5	64.4	63.6	63.1	62.6	62	61.6
329	B	2	61.3	62.9	65.4	63.9	63.3	62.6	62	61.4	60.9
330	B	3	63.5	65.4	70.2	65.8	64.4	63.5	62.8	62.1	61.5
331	B	2	59.8	61.3	65	62.2	61.7	60.9	60.3	59.8	59.5
332	B	3	61	62.4	65.9	63.6	63	62.1	61.6	61.1	60.9
333	B	3	63.7	65.3	70.5	65.9	64.5	63.6	62.9	62.2	61.6
334	B	1	59.7	61.1	65	62	61.6	60.8	60.3	59.8	59.5
335	B	2	63.9	65	70	65.7	64.2	63.4	62.6	61.9	61.3
336	B	2	62.8	63.7	67.4	64.6	64	62.8	62.2	61.6	61.3
337	B	3	60.4	61.5	64.9	62.5	62.1	61.3	60.9	60.5	60.3
338	B	2	62.2	63	67.1	64	63.5	62.4	61.9	61.4	61.1
339	B	3	62.4	61.2	64.7	62.6	62.3	61.8	61.5	61.3	61.1
340	B	3	62	60.4	63.6	62.3	62.1	61.9	61.7	61.5	61.4
341	B	3	62.5	61.6	64.5	64.3	64.2	64.2	64.1	64	64
342	B	3	63.1	64	67.5	67.4	67.4	67.4	67.4	67.3	67.3

Montbello											
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))								
			Existing	2035 No Action	2035 General-Purpose Lanes						
					No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
343	B	3	63.4	64.6	68.1	67.9	67.9	67.9	67.9	67.9	67.9
344	B	3	63.7	64.9	68.2	68	68	68	68	68	68
345	B	2	63	64.4	67.4	67.3	67.3	67.3	67.3	67.3	67.3
346	B	2	63	64.5	67.4	67.3	67.3	67.3	67.3	67.3	67.3
347	B	1	61.6	63.9	65.7	65.7	65.7	65.6	65.6	65.6	65.6

Montbello										
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))							
			Existing	2035 Managed Lanes						
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
304	B	4	57.3	60	59.3	58.9	58.6	58.3	58	57.8
305	B	2	57.3	60.6	59.6	59.1	58.7	58.4	58.3	58.1
306	B	3	57.9	61.1	60.1	59.3	58.9	58.6	58.3	58
307	B	3	58.6	62.2	60.9	59.9	59.4	59	58.7	58.3
308	B	3	59.2	63.2	61.6	60.2	59.6	59.2	58.8	58.5
309	B	2	57.9	61.7	60.6	59.7	59.3	58.7	58.2	57.8
310	B	2	58	61.8	60.5	59.6	59.2	58.5	58	57.6
311	B	3	59.8	64.3	62.7	61.2	60.4	60	59.6	59.2
312	B	5	60.4	65.7	62.7	61.8	61	60.3	59.9	59.6
313	B	2	58.8	62.9	61.2	60.2	59.9	59.2	58.4	58
314	B	3	58.6	62.8	61.1	60.2	59.9	59.2	58.3	57.9
315	B	2	59.2	63.8	61.9	61.1	60.7	60.1	59.3	58.5
316	B	3	59.8	64.4	62.5	61.7	61.3	60.6	59.5	59
317	B	2	59.6	64.3	62.3	61.5	61	60.5	59.5	58.7
318	B	2	61.3	66.5	64.5	63	61.8	61.2	60.5	59.9
319	B	2	60.8	69.1	64.2	62.7	62	61.4	61	60.6
320	B	3	61.5	69	64.3	63.1	61.9	61.3	60.8	60.3
321	B	2	59.8	64.8	62.7	61.9	61.4	60.9	60.2	59.4
322	B	2	61.2	66.4	63.7	62.7	62.2	61.5	60.5	59.7
323	B	3	61.9	69.7	64.7	63.3	62.3	61.8	61.2	60.7
324	B	2	60	65.2	63.3	62.7	62.2	61.7	61.1	60.4
325	B	3	60.6	66	63.2	62.4	61.8	61.3	60.7	59.9
326	B	3	62.8	70	65.9	64.1	63.1	62.4	61.8	61.3
327	B	3	63.3	70	65.9	64.3	63.5	62.7	62	61.4
328	B	2	61.2	66	64.6	63.9	63.3	62.8	62.2	61.8
329	B	2	61.3	65.9	64.1	63.5	62.7	62.1	61.5	61
330	B	3	63.5	70.2	66	64.6	63.8	63	62.3	61.7
331	B	2	59.8	65	62.5	62	61.2	60.6	60.1	59.8
332	B	3	61	66	63.7	63.2	62.2	61.6	61.2	60.9
333	B	3	63.7	70.3	66.2	64.7	63.9	63.1	62.5	61.8
334	B	1	59.7	64.8	62.4	61.8	61	60.5	60	59.7
335	B	2	63.9	70.3	66	64.6	63.7	63	62.2	61.6
336	B	2	62.8	67.7	64.9	64.3	63.1	62.5	61.9	61.6
337	B	3	60.4	65.1	62.8	62.5	61.7	61.3	60.9	60.7
338	B	2	62.2	67.1	64.3	63.8	62.8	62.3	61.8	61.5
339	B	3	62.4	64.6	63	62.7	62.2	61.9	61.6	61.4
340	B	3	62	63.8	62.7	62.6	62.4	62.2	62	61.9
341	B	3	62.5	65.8	65.7	65.6	65.6	65.5	65.5	65.4
342	B	3	63.1	69.1	69	69	69	69	69	69

Montbello										
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))							
			Existing	2035 Managed Lanes						
				No Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
343	B	3	63.4	69.1	69	68.9	68.9	68.9	68.9	68.9
344	B	3	63.7	69.3	69.2	69.1	69.1	69.1	69.1	69.1
345	B	2	63	67.9	67.8	67.8	67.8	67.8	67.8	67.8
346	B	2	63	67.8	67.7	67.7	67.7	67.7	67.7	67.7
347	B	1	61.6	66.4	66.4	66.4	66.4	66.3	66.3	66.4

Aurora												
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))									
			Existing	2035 No Action	2035 General-Purpose Lanes							
					No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
348	B	1	61.2	62.3	62.6	61.2	61.1	60.8	60.6	60.5	60.4	60.3
349	B	1	67.7	68.1	69.2	65.4	64.5	63.9	63.5	63.2	62.8	62.4
350	B	1	64.8	65.2	65	62.3	61.7	61.3	61	60.7	60.5	60.3
351	B	1	67.8	68	67.5	64.6	64.1	63.5	62.9	62.6	62.2	61.9
352	B	1	64.8	65.1	65	62.7	62.3	61.8	61.3	61	60.8	60.5
353	B	1	69.9	70.4	70.4	64.8	64.2	63.7	63.2	62.7	62.4	62
354	B	1	66.2	67.1	65.5	64.1	63.6	63.1	62.5	62.1	61.8	61.5

Aurora												
Receiver Number	NAC Category	Receivers Modeled	Results (dB(A))									
			Existing	2035 No Action	2035 Managed Lanes							
					No Walls	8 ft Walls	10 ft Walls	12 ft Walls	14 ft Walls	16 ft Walls	18 ft Walls	20 ft Walls
348	B	1	61.2	62.3	62.6	61.8	61.7	61.6	61.4	61.3	61.3	61.2
349	B	1	67.7	68.1	68.2	66.1	65.3	64.6	64.2	63.8	63.5	63.1
350	B	1	64.8	65.2	65.4	63.3	62.9	62.3	61.9	61.7	61.4	61.2
351	B	1	67.8	68	67.6	65.8	65.5	64.6	64	63.6	63.2	62.9
352	B	1	64.8	65.1	65.5	63.9	63.6	62.9	62.4	62.1	61.8	61.5
353	B	1	69.9	70.4	71.4	66.9	65.9	65	64.5	64	63.6	63.2
354	B	1	66.2	67.1	66.5	65	64.7	64.3	63.5	63.2	62.9	62.6

Attachment K – Appendix B

CDOT Noise Abatement Forms



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Globeville North of I-70; General-Purpose and Managed Lanes

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☐ YES ☒ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☐ YES ☒ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☐ YES ☒ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☐ YES ☒ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☒ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☒ YES ☐ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☒ NO

D. ADDITIONAL CONSIDERATIONS:


3,370 ft of noise walls, 20-ft tall, do not provide 5-dBA benefit for any receivers under either option; the existing 10-ft noise walls will remain

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

20-ft noise walls did not provide sufficient reduction to be feasible. Additional barriers beyond existing walls are not recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Globeville South of I-70; General-Purpose and Managed Lanes

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☐ YES ☒ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☐ YES ☒ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☒ YES ☐ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:

2,540 ft of noise walls, 20-ft tall, provide 66 dBA benefit at \$34,890/dBA/rec for GP and provide 94 dBA benefit at \$24,230/dBA/rec for ML; the existing 10-ft noise walls will remain

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

20-ft noise walls did not provide sufficient reduction to be reasonable. Additional barriers beyond existing walls are not recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Elyria North of I-70; No-Action Alternative, North Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


2,660 ft of noise walls, 12-ft tall, provide 704 dBA benefit at \$2,050/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 12-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Elyria North of I-70; No-Action Alternative, South Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


2,550 ft of noise walls, 12-ft tall, provide 611 dBA benefit at \$2,260/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 12-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Elyria North of I-70; Revised Viaduct Alternative, North Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


2,570 ft of noise walls, 10-ft tall, provide 680 dBA benefit at \$1,700/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 10-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Elyria North of I-70; Revised Viaduct Alternative, South Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:

3,050 ft of noise walls, 10-ft tall, provide 735 dBA benefit at \$1,870/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 10-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Elyria North of I-70; Partial Cover Lowered Alternative, Basic Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


1,500 ft of noise walls, 18-ft tall, provide 387 dBA benefit at \$3,150/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 18-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Elyria North of I-70; Partial Cover Lowered Alternative, Modified Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


1,530 ft of noise walls, 19-ft tall, provide 384 dBA benefit at \$3,400/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 19-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea North of I-70; No-Action Alternative, North Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


4,010 ft of noise walls, 12-ft tall, provide 689 dBA benefit at \$3,150/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 12-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea North of I-70; No-Action Alternative, South Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:

4,130 ft of noise walls, 12-ft tall, provide 681 dBA benefit at \$3,280/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 12-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea North of I-70; Revised Viaduct Alternative, North Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


3,520 ft of noise walls, 10-ft tall, provide 672 dBA benefit at \$2,360/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 10-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea North of I-70; Revised Viaduct Alternative, South Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


3,790 ft of noise walls, 10-ft tall, provide 725 dBA benefit at \$2,360/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 10-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea North of I-70; Partial Cover Lowered Alternative, Basic Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:

1,630 ft of noise walls, 19 and 20-ft tall, provide 309 dBA benefit at \$4,650/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 19 and 20-ft noise walls provide sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea North of I-70; Partial Cover Lowered Alternative, Modified Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☐ YES ☒ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☒ YES ☐ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:

1,150 ft of noise walls, 11-ft tall, provide 44 dBA benefit at \$12,930/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 11-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea South of I-70; No-Action Alternative, North Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


5,010 ft of noise walls, 12-ft tall, provide 961 dBA benefit at \$2,820/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 12-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea South of I-70; No-Action Alternative, South Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


5,280 ft of noise walls, 12-ft tall, provide 720 dBA benefit at \$3,960/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 12-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea South of I-70; Revised Viaduct Alternative, North Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


4,250 ft of noise walls, 12-ft tall, provide 634 dBA benefit at \$3,630/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 12-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea South of I-70; Revised Viaduct Alternative, South Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☒ YES ☐ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☐ YES ☒ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:

4,320 ft of noise walls, 12-ft tall, provide 550 dBA benefit at \$4,240/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The 12-ft noise wall provides sufficient reduction at a reasonable cost. The barrier is recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea South of I-70; Partial Cover Lowered Alternative, Basic Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☐ YES ☒ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☒ YES ☐ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


1,920 ft of noise walls, 16, 18, and 19-ft tall, provide 138 dBA benefit at \$11,010/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The barrier is not recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Swansea South of I-70; Partial Cover Lowered Alternative, Modified Option

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☐ YES ☒ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☐ YES ☒ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☐ YES ☒ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☒ YES ☐ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


3,480 ft of noise walls, 8-ft tall, do not provide 5-dBA benefit for any receiver

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The barrier is not recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Peoria Street Area; General-Purpose Lanes

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☐ YES ☒ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☐ YES ☒ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☒ YES ☐ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


270 ft of noise walls, 18-ft tall, provide 8 dBA benefit at \$27,980/dBA/rec, which is not economically reasonable.

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The barrier is not recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Peoria Street Area; Managed Lanes

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☐ YES ☒ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☐ YES ☒ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☒ YES ☐ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:

270 ft of noise walls, 20-ft tall, provide 7 dBA benefit at \$34,200/dBA/rec, which is not economically reasonable.

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The barrier is not recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Montbello Neighborhood; General-Purpose Lanes

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☐ YES ☒ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☒ YES ☐ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


3,200 ft of noise walls, 20-ft tall, provide 385 dBA benefit at \$7,480/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The barrier is recommended because it is directly replacing an existing wall.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Montbello Neighborhood; Managed Lanes

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☐ YES ☒ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☒ YES ☐ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


3,200 ft of noise walls, 20-ft tall, provide 384 dBA benefit at \$7,500/dBA/rec

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The barrier is recommended because it is directly replacing an existing wall.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Aurora Neighborhood; General-Purpose Lanes

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☐ YES ☒ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☒ YES ☐ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:


1,800 ft of noise walls, 18-ft tall, provide 20 dBA benefit at \$73,890/dBA/rec, which is not economically reasonable.

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

The barrier is not recommended.

Completed by:  Date: April 25, 2014



Noise Analysis and Abatement Guidelines

COLORADO DEPARTMENT OF TRANSPORTATION NOISE ABATEMENT DETERMINATION WORKSHEET

Instructions: To complete this form refer to CDOT Noise Analysis Guidelines

STIP # _____ Date of Analysis: April 2014

Project Name & Location: I-70 East SDEIS; Aurora Neighborhood; Managed Lanes

A. FEASIBILITY:

1. Can a 5dBA noise reduction be achieved by constructing a noise barrier or berm?
☒ YES ☐ NO
2. Are there any fatal flaw drainage, terrain, safety, or maintenance issues involving the proposed noise barrier or berm?
☐ YES ☒ NO
3. Can a noise barrier or berm less than 20 feet tall be constructed?
☒ YES ☐ NO

B. REASONABLENESS:

1. Has the Design goal of 7 dBA noise reduction for abatement measure been met for at least one impacted receptor?
☒ YES ☐ NO
2. Is the Cost Benefit Index below \$6800 per receptor per dBA?
☐ YES ☒ NO
3. Are more than 50% of benefited resident/owners in favor of the recommended noise abatement measure?
☐ YES ☐ NO

C. INSULATION CONSIDERATION:

1. Are normal noise abatement measures physically infeasible or economically unreasonable?
☒ YES ☐ NO
If the answer to 1 is YES, then:
2. a. Does this project have noise impacts to NAC Activity Category D?
☐ YES ☒ NO
b. If yes, is it reasonable and feasible to provide insulation for these buildings?
☐ YES ☐ NO

D. ADDITIONAL CONSIDERATIONS:

1,800 ft of noise walls, 20-ft tall, provide 13 dBA benefit at \$121,600/dBA/rec, which is not economically reasonable.

E. STATEMENT OF LIKELIHOOD:

- | | |
|--|---|
| 1. Are noise mitigation measures feasible?
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 2. Are noise mitigation measures reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
| 3. Is insulation of buildings both feasible and reasonable?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 4. Shall noise abatement measures be provided?
<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |

F. ABATEMENT DECISION DESCRIPTION AND JUSTIFICATION:

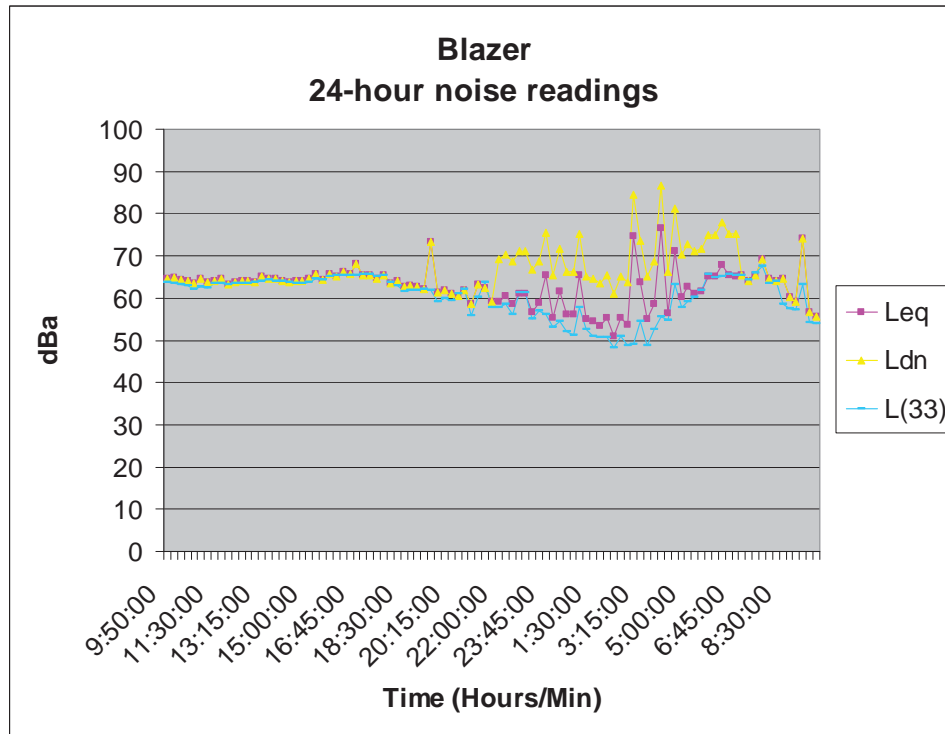
The barrier is not recommended.

Completed by:  Date: April 25, 2014

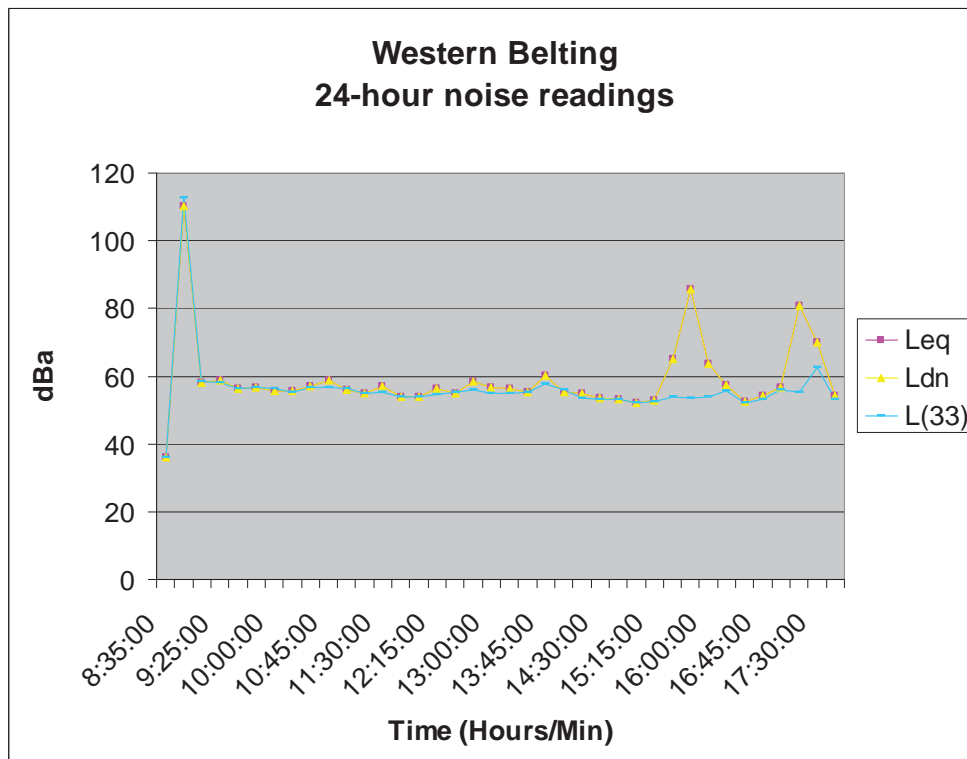
Attachment K – Appendix C
Time History Graphs for 24-hour Noise
Readings from 2003

Time History Graphs for 24-hour Noise Readings from 2003

Site 1 – Blazer (Sable Boulevard and Smith Road)



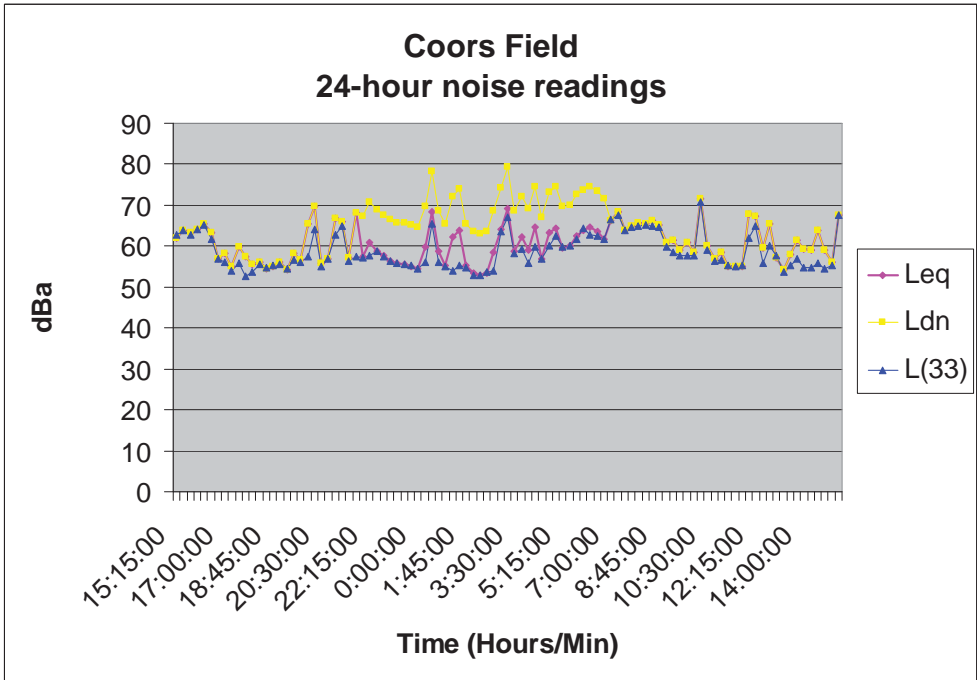
Site 2 – Western Belting (Steele Street and 42nd Avenue)



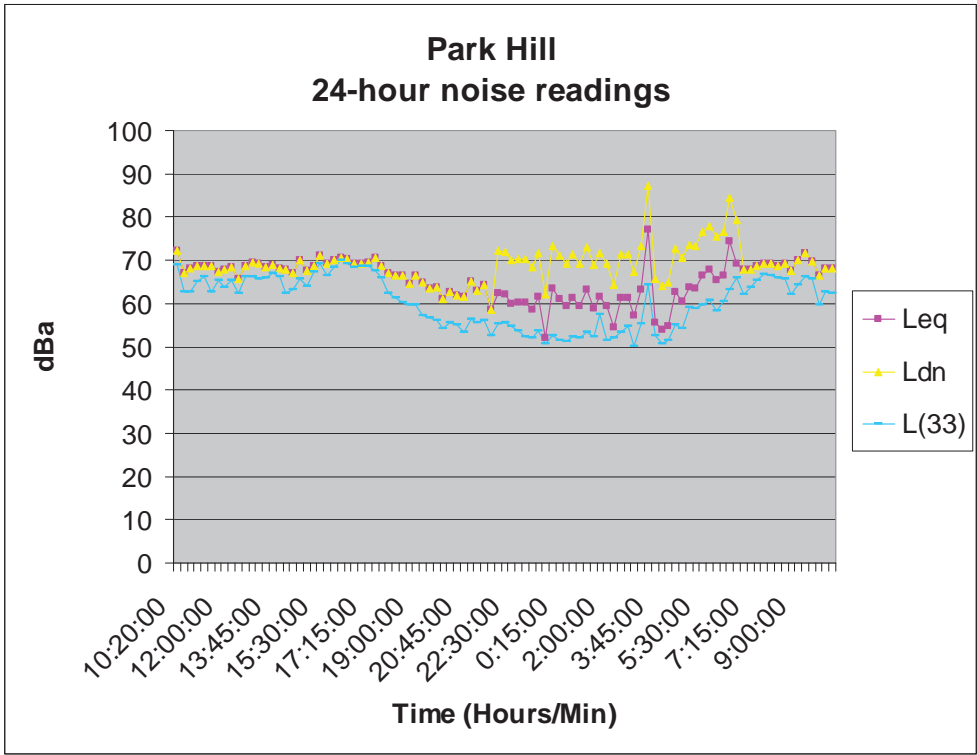
Site 3 – Whittier Lofts (Downing Street and 29th Avenue)



Site 4 – Coors Field (Blake Street and 33rd Avenue)



Site 5 – Park Hill Golf Course (Colorado Boulevard and Smith Road)



Site 6 – Red Ball Moving (42nd Avenue and Madison Street)

Attachment K – Appendix D

Field Notes and Readings

Prepared by:

Date:

August 22, 2012

#1

S. of Dia Self Storage

1

EB: 607 cars

10 min count 10:25-10:35am

2

27 medium

85°, mostly sunny

3

84 trucks

4

WB: 484 cars ← some difficult to see, could be higher

5

32 medium

6

102 trucks

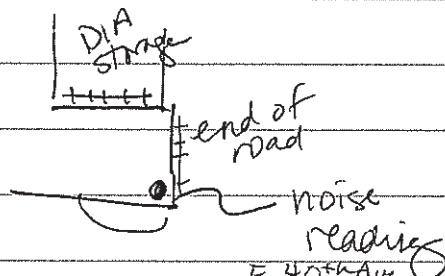
61.3 dBA

7

8

9

10



10:50-11am

#2

Ambient

E. 40th Ave.

15255

Sable Ridge

Residences

56.8 dBA

12

Apartment complex?

13

Reading taken same dist. from hwy as 1, 2, 3rd floor patios

14

6 patios facing hwy

15

#3

Ambient ~500' from hwy in Montbello

17

on street (Freya Way)

Additional noise: local street,

18

in residential.

garden hose, airplanes

19

51.2 dBA

20

11:05-11:15am

#4

Kalispell / 38th Ave

22

EB: 515 cars ~~2000~~

75.3 dBA @ 50'

23

20 med

24

66 heavy

25

WB: 610 cars 2b overpass

73.4 dBA @ 100'

26

25 med 49% 1-70

breeze/trees 10mph

27

42 heavy 49% PMA

28

29 #5 Kalispell south @ 500' 12:00 - 12:10pm

30

31 EB: 463 car

32 12 med

5 mph breeze

33 77 heavy

34 WB: 615 car

59.9 dBA

35 26 med

noise meter slightly lower

36 51 heavy

than a "hill" b/n meter & hwy

37

38 #6 I-270 Commerce City

39 EB: 349 car

1:20 - 1:30pm

40 23 med

71.4 dBA

41 29 heavy

10 mph wind

42 WB: 309 car

several trucks on local st.

43 15 med

44 40 heavy

45

46 #7 Ambient Locust & 54th Ave

1:40 - 1:50

47 (no local road noise)

0 - 5 mph breeze

48

49 59.9 dBA

50 #8 Ambient - ~~at~~ Cemetery

51 other noise: 5-10 mph wind

2:15 - 2:25

52 train horn, commercial/mechanical noise

55.3 dBA

53 #9 Ambient - Elyria school (old loc.)

54 bird, people talking, several cars on

58.4 dBA

55 local streets

56

1-70 East Noise Readings

Prepared by:

Date:

OCT 4, 2012

1

2

3

47° F, Cloudy, 0-5mph wind

5

6

7

10:40am Reading #1: Grant St/46th Drive (south of) - 2nd house south of
hole in noise wall for fire hydrant

Leg (10min) = 63.9 dBA

9

10

11

11:00am Reading #2: Grant St/45th Ave - 2nd house north of
Addtl sounds: vehicles (incl. trucks) on 45th Ave, & talking helicopter
Leg = 61.3 dBA → most noise not due to 1-70

13

14

15

16

17

18

19

11:25am Reading #3: Pennsylvania/46th Ave - 1st home north

Reading #4: Pennsylvania/46th Ave - 2nd home north

#3 Leg = 61.6 dBA

#4 Leg = 58.6 dBA

Addtl sounds = traffic on 46th Ave, hole in wall for fire hydrant

Quieter than usual - hung closed for part of readings
due to Obama



11:40am Reading #5: Pennsylvania/47th - south

Reading #6: Pennsylvania/47th - south

Addtl sounds = dog inside barking, cars on street, train horn (in distance)

#5 Leg = 52.8 dBA

#6 Leg = 55.5 dBA

12:00pm Reading #7 = Park near train tracks

Addtl sounds: train horns & train (~2 min @ 58-60 dBA)

Note: EB traffic moving ~30 mph. for most of reading

29

Add terrain lines in model

30

Leq = 57.3 dBA

31

1:20 pm

#8 Vine Street / 46th Avenue - north of 1st/2nd house

33

Near Purina Plant - industrial activity; construction occurring under viaduct, ppl talking nearby

34

35

Leq = 64.7 dBA

36

1:35

#9 Vine St / 47th Avenue - library lawn

38

Purina Plant industrial sounds, some local parking lot traffic most sound not from I-70 → most from Purina, 5 mph breeze

39

40

Leq = 57.7 dBA

41

1:55

#10 N side of school - Elizabeth / 47th (south of)

43

Street sweeper, local traffic, road paving equipment, 5-10 mph breeze

44

Leq = 57.2

45

2:10 pm

#11 Elizabeth / 46th (north of)

47

#12 Elizabeth / 46th (north of)

48

local street traffic, 5-10 mph breeze

49

Leq #11 - ~~60.0~~ 64.2

50

Leq #12 - ~~60.0~~ 62.6

51

Dunham
~~road~~

52

#13 - Clayton / 15th - north end of park

00

53

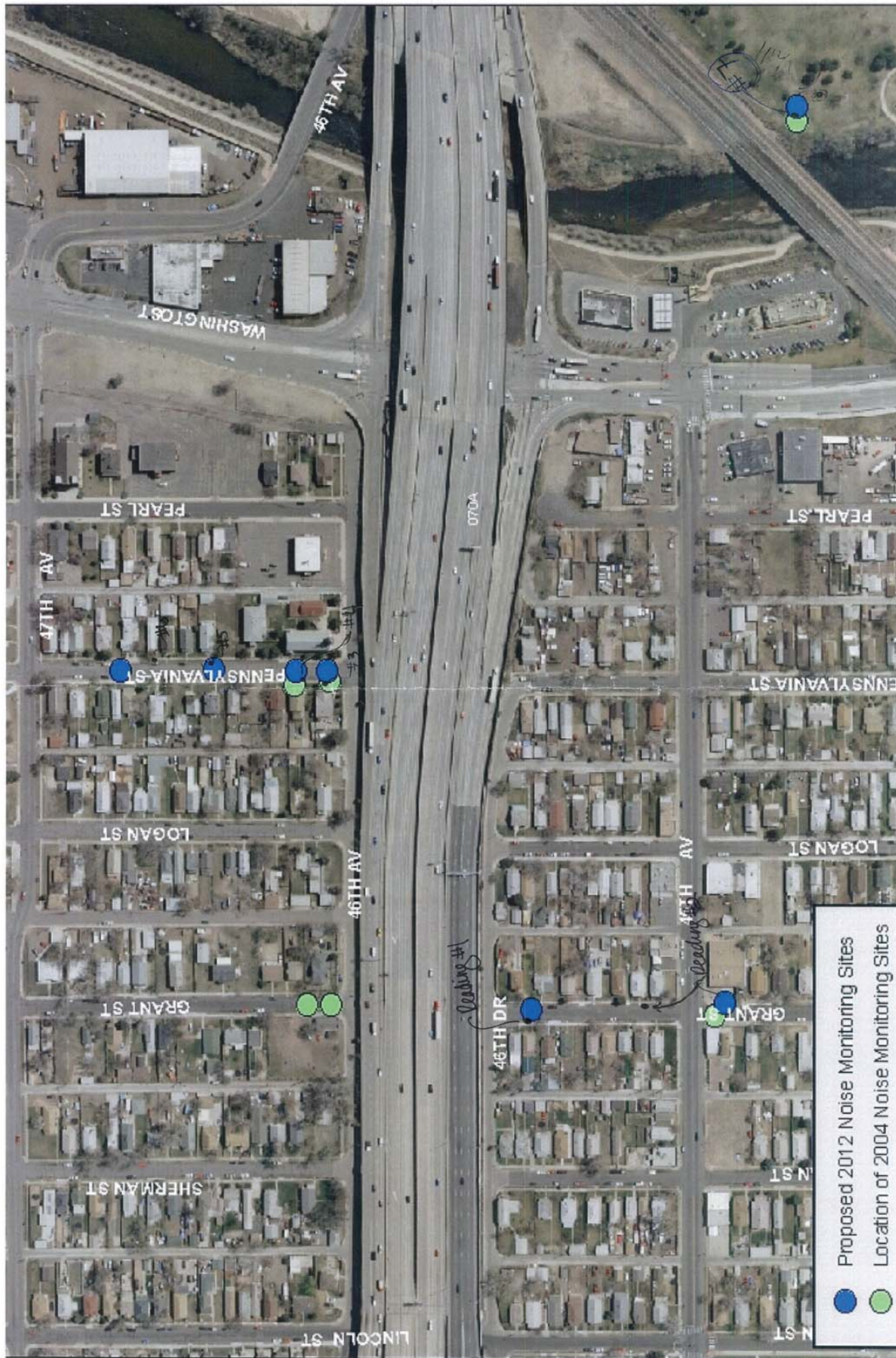
train or industrial ~~road~~ noises

54

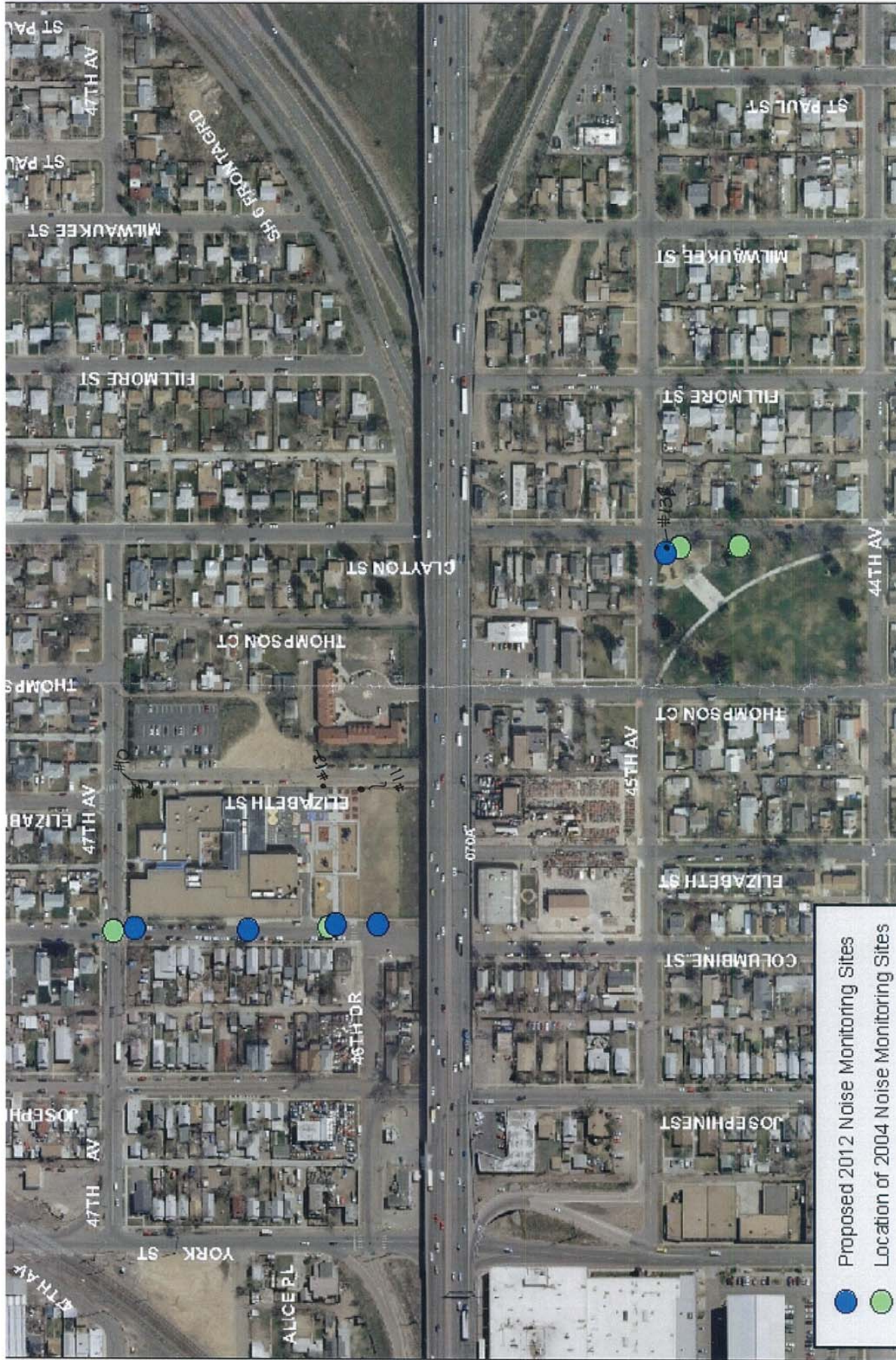
Leq = 61.6 dBA

55

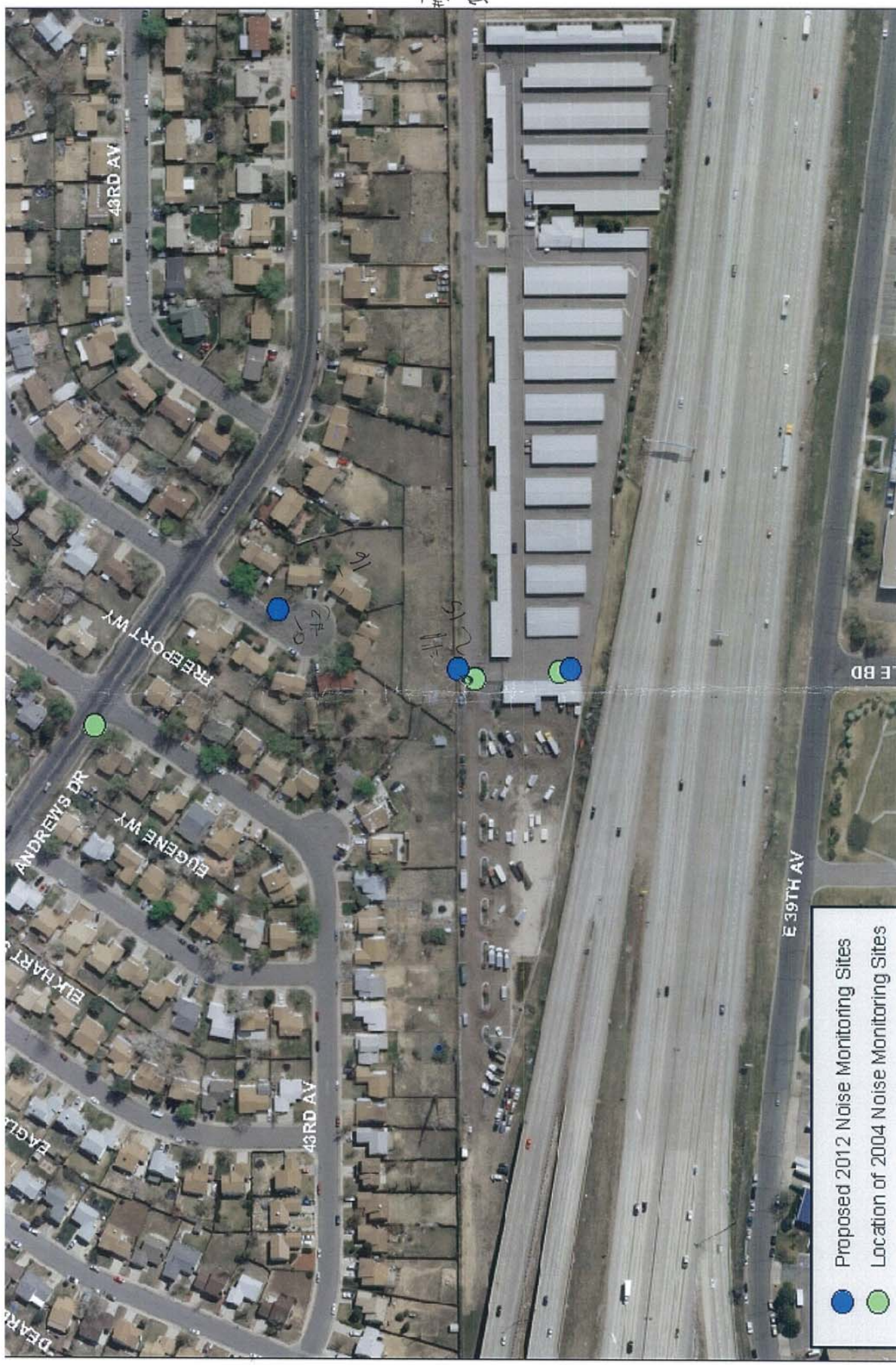
56



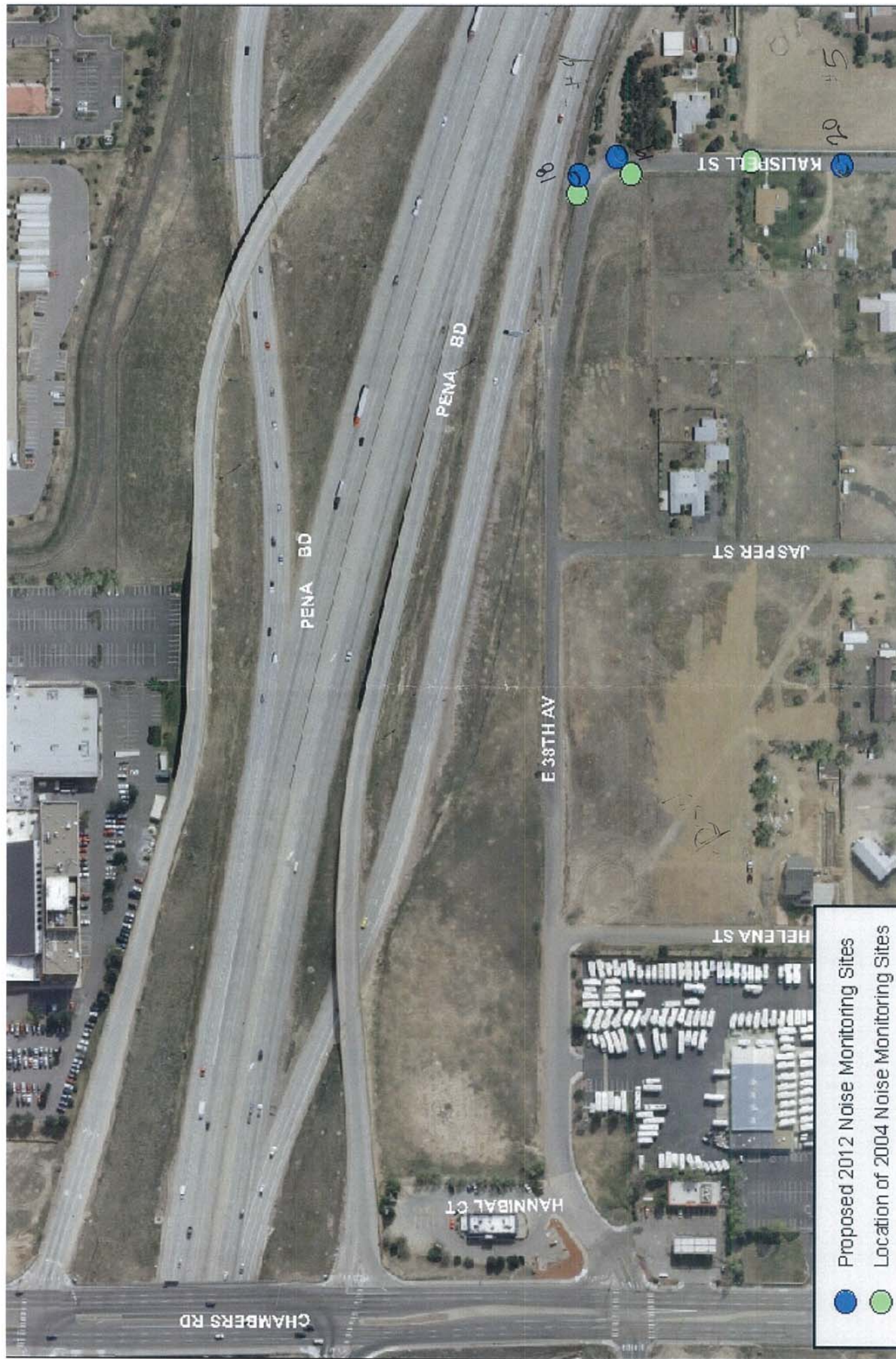




12
12



- Proposed 2012 Noise Monitoring Sites
- Location of 2004 Noise Monitoring Sites



- Proposed 2012 Noise Monitoring Sites
- Location of 2004 Noise Monitoring Sites

Realign only



11th Ave

